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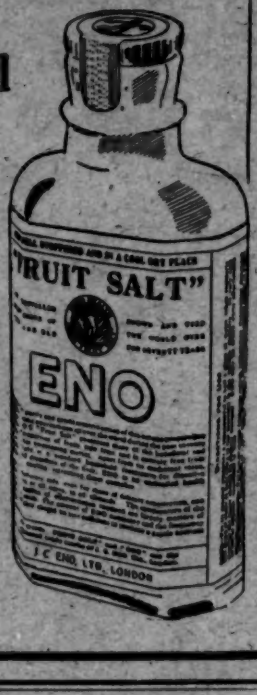

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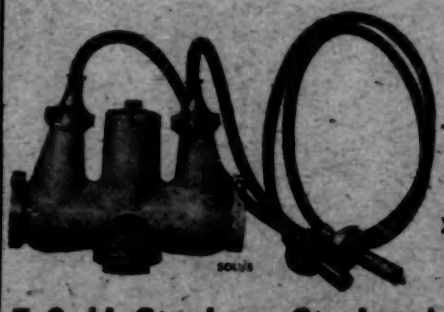

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY APRIL 7 1945

CONTROL OF INFECTION IN RECENT WOUNDS BY SURGERY AND LOCAL CHEMOTHERAPY

BY

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In the present organization of war surgery wounds are treated by a two-stage operation. At the first operation, at a casualty clearing station, contaminated and grossly damaged tissues are removed, and the wound is laid open so that there is free drainage, with an absence of tension, while the patient is being evacuated to the base. Several days later the wound is examined in hospital and is sutured if possible.

The main object of the first operation is the control of infection, and the subsequent progress of the case is determined by the success with which this object is achieved. No one with experience of war wounds will deny that adequate surgery at the first operation is of paramount importance. After surgery is completed, however, some degree of infection is likely to remain, and it is in connexion with this residual infection that a bacteriostatic may be of value. Although sulphonamides have been in use for many years, evidence of their true worth in the control of infection in wounds has never been obtained. With the advent of penicillin it was of increased importance to decide, by a large-scale clinical trial, the precise value of these two bacteriostatics in the treatment of recent wounds.

Evidence of the comparative effects of penicillin–sulphanilamide and sulphanilamide alone as bacteriostatics was given by Thomson (1944), from observations made during the invasion of Sicily. In 85 wounds operated upon at casualty clearing stations and treated with sulphanilamide powder 57% were infected on arrival at the base several days later; whereas in 61 wounds that had received penicillin–sulphanilamide powder 26% were infected.

This survey was a limited one. It was necessary to carry out a more extensive inquiry in which comparison was also made with wounds not treated with a bacteriostatic. The battle for the Gothic Line provided the opportunity. This battle was fought in wet weather on cultivated ground. Casualties were heavy and casualty clearing stations were working under pressure. The treated wounds were therefore a fair sample of what could be expected from experienced forward surgeons under battle conditions. The difficulty of comparing one type of case with another was simplified, since all external conditions such as terrain, weather, forward surgeons, lines of communication, and base surgeons were the same throughout the period of this inquiry.

The purpose of this investigation was to determine the value of sulphanilamide and penicillin when applied locally in the treatment of recent wounds. In the course of the inquiry information was also obtained of other factors in wound treatment—in particular, the importance of the interval between wounding and the first operation, and of the re-dressing of wounds between C.C.S. and base hospital.

Methods

The casualties from the battle were sent from C.C.S.s to a port, and were conveyed by ship to the hospital area, arriving about the fifth to seventh day after injury. Within the next day or so they were taken to the operating theatre and the wounds were examined and sutured if possible. The following data were considered relevant:

1. *Interval before Operation at C.C.S.*—This could usually be obtained from the field medical card or by inquiry from the patient. Only cases in which it was possible to determine the interval with accuracy were included in the assessment of this time interval.

2. *Chemotherapy at C.C.S.*—It was arranged with forward surgeons at the start of the battle that penicillin–sulphathiazole powder would be applied to wounds alternately with sulphanilamide and that in a number of cases no bacteriostatic would be employed. There were therefore, initially, three groups of cases, depending on the wound chemotherapy. In addition there was eventually a fourth group comprising those cases in which no entry was made on the field medical card and which were most probably treated with sulphanilamide. It was found convenient for the purposes of tabulation to include with this fourth, or "miscellaneous," group a number of wounds that had been dressed with an antiseptic—e.g., acriflavine or sulphathiazole–proflavine powder. It should be stated at the outset that the casualties in which no bacteriostatic was employed were carefully watched along the lines of communication and at the base hospital. In no case was the wounded part endangered by this omission, and there was no instance of spreading sepsis.

3. *Age of Wounds at Time of Examination and Suture at Base Hospital.*—This information was readily available, and was measured in days.

4. *Severity of Wounds.*—Wounds were divided into three classes:

Class A.—Gutter wounds of skin and fat alone, or with superficial muscle injury.

Class B.—Wounds with penetrating tracks; or through-and-through wounds with deep muscle injury, sometimes associated with a minor fracture.

Class C.—Large lacerated wounds with extensive muscle destruction; amputations; or major fractures.

5. *Condition of Wound.*—The clinical appearance of the wound was noted and a swab was taken for bacteriological examination at the time it was first examined in hospital. It is convenient to describe here the terms employed in collecting material for this report.

"*Clean.*"—A clean wound was one that had the naked-eye appearances of a wound recently operated upon and showed no reactive changes.

"*Dirty.*"—A dirty wound was one in which the surface was covered by tissue exudates.

"*Infected.*"—The term "infected" indicated only the presence of pyogenic cocci in a wound—*Staph. pyogenes aureus* or *Str. pyogenes.*

"*Septic.*"—Those dirty wounds that were infected with pyogenic cocci were called "septic." About half the dirty wounds came into this category.

6. *Dose of Sulphanilamide by Mouth.*—Tablets of sulphanilamide were given to many of the wounded men at the C.C.S. and during the period of travel to hospital. Administration of the drug and entries on the medical cards were irregular. Further information was obtained by questioning the patients: but, even so, the data often remained incomplete.

7. *Re-dressing of Wounds.*—The majority of wounds had not been touched or disturbed in any way between the operating theatre in the C.C.S. and examination in the base hospital theatre. Such wounds are discussed separately in the report. A number of wounds, however, had been re-dressed; evidence was obtained to show that it was not necessarily the septic wounds that had been subjected to this intervention.

8. *Bacterial Flora.*—The swab was taken from the surface wound and any deep track, without touching the skin edges. A wound-swab was accepted as the best method of obtaining a representative sample of the bacterial flora and of providing a qualitative examination of obvious wound infection. The energies of the laboratory were directed towards isolation and precise identification of pyogenic cocci, but with sufficient attention to other bacteria to establish at least their bacteriological group. All strains of *Staph. pyogenes aureus* and *Str. pyogenes* were examined for the property of resistance to penicillin. In addition to this examination of wounds on arrival at the base hospital, swabs were taken from 100 wounds at a C.C.S. before operation was begun in order to determine the original rate of infection in this battle. The swabs were examined by Major H. E. Hutchinson, of No. 1 Mobile Bacteriological Laboratory, to whom we are indebted.

9. *Result of Suture.*—The majority of wounds were sutured at the time of their first examination in the operating theatre at the base hospital. Penicillin was given as a routine either by insufflation of penicillin–sulphathiazole powder at operation or by subsequent instillation of a solution of penicillin through tubes into the sutured wound. The results were expressed in terms of percentage of wound union. It was obviously not possible to determine the figure with a high degree of accuracy, and in assessing the results of suture only three grades were adopted: Grade I, 85% union or better; Grade II, 70 to 85% union; Grade III, less than 70%.

Value of Chemotherapy in Control of Infection

Staph. pyogenes aureus was found to be by far the most common pyogenic coccus. *Str. pyogenes* (haemolytic streptococcus) was isolated from 6% of all wounds, and from only 1.5% in the absence of the staphylococcus. In the 100 wounds from this battle that were examined in the operating theatre at a C.C.S. before operation was begun pyogenic cocci were found in 51 (figures provided by Major Hutchinson). This was the basic infection rate which surgery and chemotherapy had to combat, and the figure with which to compare the results of treatment. These results were studied in 706 wounds in which the dressing had not been disturbed between the operating theatre at a C.C.S. and examination in the base hospital. In wounds treated at C.C.S.s the rates of infection according to the chemotherapy previously employed were:

Operation only, without bacteriostatic: 49% of a total of 116 wounds were infected.

Operation and sulphanilamide powder: 43% of a total of 213 wounds were infected.

Operation and "miscellaneous" chemotherapy: 40% of a total of 122 wounds were infected.

Operation and penicillin–sulphathiazole powder: 25% of a total of 255 wounds were infected.

Thus operation alone did not appreciably reduce the incidence of infection compared with the infection rate before operation, and the introduction of sulphanilamide into the wound produced little further improvement. The use of penicillin–sulphathiazole powder, however, caused a significant reduction in infection rate to one-half of the pre-operation figure.*

It was necessary to inquire whether this difference was due to selection of special cases for penicillin treatment; in particular, whether the apparent advantage of penicillin might be due to its having been used for selected wounds and for those coming under treatment early. The significance of the time at which a wound was first operated upon is discussed below. At present it can be stated that penicillin–sulphathiazole showed an advantage over sulphanilamide irrespective of the time the wound came under treatment. It was possible also to demonstrate that the severity of the wound did not influence the relative rates of infection. If the wounds were classified according to their severity it was seen that, while more of the large and serious wounds received penicillin–sulphathiazole powder, the reduced incidence of infection following penicillin treatment occurred equally in superficial trivial wounds and in extensive ones. There was no tendency for the result to be influenced by the severity of the wound.

Wound Sepsis

It is emphasized that the above figures refer to rates of infection as determined by a bacteriological examination of the wound. There was no correlation between the clinical appearance of the wound and the presence of pyogenic cocci, many clean wounds containing *Staph. pyogenes aureus* and many dirty wounds yielding no pyogenic bacteria on culture.

Of the undisturbed wounds 20% were dirty, being covered with exudate, and about one-half of these contained pyogenic cocci (septic). The septic wounds were of special importance in this investigation into the control of infection because they were the wounds in which the infecting bacteria had "taken hold." Of the wounds treated by operation alone and without a bacteriostatic, 23% were septic; in those in which sulphanilamide was locally employed this incidence was reduced by one-half (11%); and in those treated with penicillin–sulphathiazole 7% of the wounds were septic (Table I).

TABLE I.—*Rates of Infection and Sepsis in Relation to Chemotherapy*†

	No.	Infected (%)	Septic
Penicillin-treated wounds	255	25	19 (7%)
Sulphanilamide-treated wounds	213	43	23 (11%)
Wounds untreated with a bacteriostatic ..	116	49	27 (23%)

The precise value of operation and local chemotherapy in this series of wounds can thus be stated in the following terms. Operation alone, without the use of a bacteriostatic, did not appreciably reduce the incidence of infection compared with the original infection rate that followed wounding. This is what would be expected, for unless a mutilating excision was performed not all potentially infected tissues would be removed. The aim of the forward surgeon is to remove only those tissues that are grossly damaged, and by adequate incisions to leave the wound in the best possible condition for dealing with the infection that remains. The value of this treatment is seen in the wounds that were treated by operation only; although one-quarter of them were septic, the sepsis was confined to the surface layers of the wound, and there was no instance of the septic process spreading along the limb or tracking deeply.

Sulphanilamide applied locally had a bacteriostatic effect, for, although the infecting bacteria persisted, their activity was depressed, so that the incidence of sepsis was reduced compared with wounds in which no bacteriostatic was employed. Penicillin–sulphathiazole powder had a greater effect, for its use was followed by the destruction of the pyogenic organisms in one-half of the infected wounds and by an equally low incidence of sepsis.

It is obviously of value to use sulphanilamide or penicillin–sulphathiazole powder at the operation at the C.C.S., and of the two bacteriostatics penicillin–sulphathiazole is shown to be the more potent.

Effect of Re-dressing of Wounds on the Infection Rate

Of 869 consecutive wounds examined, 163 had been re-dressed between operation at the C.C.S. and examination in the operating theatre at the base hospital. If these wounds had

* The difference in incidence of infection between wounds treated with penicillin–sulphathiazole powder and any of the other three groups exceeds three times its standard error. There is no significant difference between the other three groups.

† The difference in incidence of sepsis between wounds untreated with a bacteriostatic and those receiving sulphanilamide or penicillin exceeds three times its standard error. The difference between penicillin- and sulphanilamide-treated wounds is not significant.

been re-dressed because they were septic, it would be expected that they would include a large proportion still septic on examination at the base hospital. This was not found to be so, as only 15% were septic, which is an incidence of sepsis no greater than that shown by the general series of undisturbed wounds (Table I). If the re-dressed wounds were classified according to their severity the following distribution was found:

Class A (superficial wounds): 122 wounds = 25% approximately of all Class A wounds.

Class B (deep penetration): 41 wounds = 12% approximately of all Class B wounds.

Class C (deep and extensive wounds): None.

It appeared, therefore, that the more accessible wounds had been selected for dressing.

The re-dressed wounds were found to have a higher incidence of infection than had wounds which had not been disturbed during evacuation of the patient. In 67 re-dressed wounds treated originally with penicillin–sulphathiazole powder the infection rate was 42%, compared with 25% in undisturbed wounds; and where the original treatment had been with sulphanilamide the incidence was 55% of 60 wounds, compared with 43%. The importance is confirmed of sealing off the wound with an occlusive dressing at the end of operation at the C.C.S., and of refraining from further dressings, in the absence of obvious complications, until the patient is in the operating theatre at the base hospital.

Significance of Time of Operation in Control of Infection

In the history of a wound there are two intervals of importance—the number of hours that elapse between wounding and operation at the C.C.S., and the number of days before the second operation in the base hospital.

It had already been found that the rates of infection were influenced by the use of different bacteriostatics and by re-dressing of the wounds. These two conditions had therefore to be taken into account in considering the importance of a third factor—the time of operation. This was done by showing in the 706 undisturbed wounds the relation between infection and time intervals in each of the chemotherapy groups. The following terms are employed:

"Early C.C.S.": An interval of 12 hours or less between wounding and operation at C.C.S.

"Late C.C.S.": An interval of 12 to 24 hours between wounding and operation at C.C.S.

"Early Hospital": An interval of 5 days or less to time of examination of wound in hospital.

"Late Hospital": An interval of more than 5 days to time of examination of wound in hospital.

The time of arrival at the base hospital was not related to the time of the first operation.

Incidence of Infection According to Time of Arrival at Base Hospital.—There was no significant difference in infection rate between wounds admitted to the base hospital in the first 5 days after wounding compared with those admitted late. This finding is not brought forward to suggest that delay in evacuation is unimportant. It indicates, however, that if the forward treatment is completed and the wound is sealed off, infection does not readily gain access or develop during the following 10 days.

Incidence of Infection According to Time of First Operation.—There was a lower incidence of infection in wounds that had been operated upon in under 12 hours compared with those that had been treated between 12 and 24 hours, in all the chemotherapy groups. The figures of comparison are presented in Table II.

TABLE II.—*Incidence of Infection According to Time of First Operation*

Treatment	No. of Infected Wounds	
	Early C.C.S.	Late C.C.S.
Penicillin-treated	27 out of 150 (18%)	24 out of 63 (38%)
Sulphanilamide-treated ..	38 out of 108 (35%)	35 out of 66 (53%)
No chemotherapy	29 out of 64 (45%)	18 out of 35 (51%)
Total	94 out of 322 (29%)	77 out of 164 (47%)

This table summates the figures of Early and Late Hospital.

There was thus a marked difference in infection rate according to the interval between wounding and operation. One of the features of the organization of surgery in this war has been the efforts to take surgery speedily to the wounded man, and it is of particular interest to confirm the value of early surgery in the control of wound infection.

Advantage of Penicillin over Sulphanilamide in the Different Age Groups.—It is convenient here to consider whether the advantage of penicillin–sulphathiazole powder over sulphanilamide in the control of infection occurred irrespective of the time that the wound came under treatment. To make this comparison the incidences of infection after the use of the two bacteriostatics are shown side by side in the four possible age groups.

(i) Early C.C.S.: Early Hospital

Penicillin-treated wounds .. .. 4 infected out of 44 (9%)
Sulphanilamide-treated wounds .. 10 „ „ 32 (31%)

(ii) Early C.C.S.: Late Hospital

Penicillin-treated wounds .. .. 23 infected out of 106 (22%)
Sulphanilamide-treated wounds .. 28 „ „ 76 (37%)

(iii) Late C.C.S.: Early Hospital

Penicillin-treated wounds .. 5 infected out of 17 } (Figures too small
Sulphanilamide-treated wounds .. 6 „ „ 17 } for comparison)

(iv) Late C.C.S.: Late Hospital

Penicillin-treated wounds .. .. 19 infected out of 46 (41%)
Sulphanilamide-treated wounds .. 29 „ „ 49 (59%)

In each age group penicillin–sulphathiazole-treated wounds had a lower infection rate than had wounds treated with sulphanilamide. The results claimed for penicillin–sulphathiazole powder are thus shown to be valid irrespective of the time the wound came under treatment.

Effect of Sulphanilamide by Mouth

Entries in the field medical card showed that nearly all the wounded men received 2.5 g. of a sulphonamide at the advanced dressing station. Thereafter, administration of the drug and entries in the records were irregular. Although many patients were questioned about taking the tablets, the available information remained incomplete. Few of the men had a full course of the drug, but records were obtained of 127 men who had received 7.5 g. or more and whose wounds were undisturbed. The incidence of infection and that of septic wounds in these patients were the same as in the general series.

Relation Between Infection and Results of Suture

So far in this report the incidence of infection has been used to measure the value of the different factors that were under investigation (bacteriostatic, time of operation, etc.). This infection is of more than laboratory interest. The justification of our use of infection as the criterion by which to assess forward surgery and chemotherapy, and the practical importance of pyogenic bacteria in a wound, are seen when the presence of infection is related to the results of suture.

Seven hundred and fifteen of the wounds were sutured. Wound repair was the work of a group of surgeons (specialists, graded surgeons, and trainees), so that the results were representative of what can be achieved in the large-scale suture of wounds when penicillin is used as a routine. Seventy-five per cent. of wounds achieved the first grade of union (i.e., above 85% union); of the remaining 25% one-half obtained an intermediate grade of healing (70 to 85% union) and one-half were relative failures.

When the results were arranged according to the presence or absence of infection in the wounds at the time of operation it was found that the presence of pyogenic organisms had an adverse influence. This was seen most clearly when the clean and dirty wounds were considered separately.

Of 614 clean wounds 424 were free from pyogenic organisms, and 85% of these obtained Grade I union; 190 wounds were infected, and only 62% of these attained the first grade. Of 101 dirty wounds 52 were free from pyogenic bacteria, and 80% of these obtained Grade I healing—that is, almost the same degree of success was obtained as in the suture of uninfected clean wounds. The 49 infected dirty wounds did not do well, only 37% reaching the first grade. The full results are given in the Appendix (Tables A and B).

Thus the results of suture were related less to the appearance of the wound than to the presence of pyogenic bacteria. This does not mean that a bacteriological examination of the wound should be carried out before suture is performed. On the contrary, the surgeon is encouraged to suture wounds (in the presence of penicillin) whether they appear clean or dirty. The significance of these findings is to confirm the importance of pyogenic bacteria in the wound at the time of arrival at the base hospital, and thereby to emphasize the value of the control of infection by early operation at the C.C.S., by the use of penicillin–sulphathiazole powder as a bacteriostatic at the forward operation, and by avoidance of dressing of the wound between forward and rear surgeons.

Influence of Resistant Strains of Staph. pyogenes aureus on Suture

All strains of *Staph. pyogenes aureus* were examined for the property of resistance to penicillin. Of the strains 20% were resistant to the concentration of penicillin that is produced by parenteral therapy (1/10 unit per c.cm.), but only one-half of these strains grew in 10 units of penicillin per c.cm., and few grew in broth containing 50 units per c.cm. Thus while 20% of strains of *Staph. pyogenes aureus* could fully resist the concentration of penicillin that obtains in parenteral therapy, many of these strains could be influenced by the increased concentrations that local therapy might provide.

It will be recalled that of the 614 clean wounds 190 were infected. Among these 190 strains of *Staph. pyogenes aureus* 33 were "resistant." Suture of the 33 wounds, accompanied by the local use of penicillin, was followed by the same standard of union as was the suture of clean wounds infected with "sensitive" strains.

The high concentration of penicillin that is obtained by local penicillin therapy has been shown to be of advantage in some situations—e.g., in the pleural cavity (d'Abreu *et al.*, 1944) and in compound fractures (Bentley *et al.*, 1944). These present results of suture indicate that it is also of value in dealing with strains of staphylococci possessing some degree of resistance to the drug.

Summary

In an investigation of 1,000 wounds during the battle for the Gothic Line the organism of initial sepsis was found to be *Staph. pyogenes aureus*. *Str. pyogenes* (haemolytic streptococcus) was rarely found.

The incidence of infection in wounds before operation at the C.C.S. was about 51%.

In wounds undisturbed during transit, and treated at the C.C.S. by operation alone, 49% were infected and 23% were septic; by operation and sulphanilamide powder, 43% and 11%; by operation and penicillin–sulphathiazole powder, 25% and 7%, when examined in the base hospital 5 to 10 days later. Thus operation alone did not completely remove infection from a recent wound. Its effect was to leave the wound in the best possible condition for dealing with the infection that remained. Sulphanilamide applied locally had a bacteriostatic effect; for although the infecting bacteria persisted, their activity was depressed, so that the incidence of sepsis was reduced. Penicillin–sulphathiazole powder similarly applied was more effective; for its use was followed by the destruction of the infecting cocci in about one-half of the infected wounds, with an equally low incidence of sepsis.

Wounds operated upon at the C.C.S. in under 12 hours had a lower incidence of infection than those operated upon between 12 and 24 hours, in all the chemotherapy groups. The length of time between wounding and arrival at the base hospital was found to make no significant difference in the infection rate.

Wounds that had been re-dressed between C.C.S. and base hospital had a higher incidence of infection than had those that had not been disturbed.

The importance of control of infection by operation and chemotherapy at the C.C.S. is illustrated by the results of suture. The presence of pyogenic organisms in the wound at the time suture was performed had an adverse influence on the result obtained. Of wounds uninfected with these organisms 80 to 85% obtained Grade I union, whether appearing clean or dirty; whereas wounds that were infected, even if appearing clean, showed a lower rate of success.

The presence in wounds of staphylococci possessing some measure of resistance to penicillin did not influence the results of suture when penicillin was employed locally in the wound.

APPENDIX

TABLE A.—*Results of Suture of 614 Clean Wounds in Relation to Infection*

Condition	Total No.	Degree of Success of Suture		
		No. Achieving Grade I Union	No. Achieving Grade II Union	No. Achieving Grade III Union
Infected ..	190	118 (62%)	37 (20%)	35 (18%)
Non-infected ..	424	362 (85%)	33 (8%)	29 (7%)

TABLE B.—*Results of Suture of 101 Dirty Wounds in Relation to Infection*

Condition	Total No.	Degree of Success of Suture		
		No. Achieving Grade I Union	No. Achieving Grade II Union	No. Achieving Grade III Union
Infected ..	52	19 (37%)	9 (17%)	24 (46%)
Non-infected ..	49	39 (80%)	9 (18%)	1 (2%)

Grade I union = 85% union or better. Grade II union = 70 to 85% union. Grade III union = Under 70% union.

The data on which this paper is based are taken from a report to the Director of Pathology, War Office, by Thomson and Bentley (1944). We are grateful to Major-Gen. L. T. Poole, D.S.O., *M.C.*, for permission to publish from the War Office report.

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BLAST INJURY TO THE LUNGS

CLINICAL AND RADIOLOGICAL FINDINGS AND THEIR RELATION TO CERTAIN SYMPTOMS

BY

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(From a War Hospital)

The effects of explosive blast on the lungs have been studied by Zuckerman (1940) in animals, and clinical and post-mortem findings during the present war, recorded by a number of observers, correspond in the main with those found experimentally. The lesion as it affects the lungs is haemorrhage due to capillary rupture, or possibly diapedesis (Hadfield, 1940-1). According to their severity, Zuckerman has classified the lesions as: (1) a few small haemorrhages on surfaces of lungs; (2) patchy haemorrhages throughout the lungs; (3) complete hepatization of the lungs by haemorrhages. His explanation that the lesions are produced by the wave of positive pressure acting directly on the chest wall would appear to be generally accepted and is convincingly supported by his work. The general clinical picture is definite enough in the groups of cases reported, but both individual symptoms, such as haemoptysis, and radiological evidence of blast injury have a varied incidence.

The Cases

Among the large number of chest injuries, penetrating and non-penetrating, admitted to this hospital 21 appeared to have been caused by blast, and were unaccompanied by additional trauma. No case has been included in which fractured ribs might account for damage to the lung or pleura or in which there was a history of burial by debris together with bruising of the chest wall. A certain amount of selection was inevitable, as only patients fit to travel reached this hospital, the interval between injury and arrival being on the whole proportionate to the severity of the condition. Only one of the cases was seen here earlier than three days after wounding; the majority arrived three to five days and several as long as 10 to 14 days after. It was thus possible to observe cases at different intervals after injury and watch their progress for a few days before sending them on to base hospitals.

The explosive sources were hand-grenades, mortar bombs, land mines, aerial bombs, and in two cases flying bombs.

Although unconsciousness occurred at the time of injury in the majority, the accounts of the positions of the patients in relation to the explosions, the type of bomb, and in many cases the distance from the explosion were surprisingly detailed. With few exceptions the blast seemed to have been sustained chiefly by the chest, and, conversely, cases of abdominal blast—not included in this series—were noticeably free from pulmonary symptoms.

Symptoms

The attitude of mind of these patients was strikingly calm, contrasted with the anxiety and over-reaction shown by many to describe their sensations after being exposed to blast, and in these cases rapid wheezing respirations, coughing of frothy blood-stained sputum, and sometimes cyanosis were recorded.

Pain was a constant feature, but its duration varied. Two types occurred, sometimes separately, sometimes together: (1) retrosternal pain, constant or intermittent, the latter often relieved by coughing up mucus or blood; (2) muscular pain, accompanied by tenderness, occurring most commonly in the intercostal muscles and occasionally in the upper abdomen and muscle masses of the back. In some cases the pain was severe, with extreme tenderness a week or more after injury, limiting

Table showing Inverse Relation of Haemoptysis to Incidence of Massive Haemorrhage as revealed by Radiographs

Case	Explosive Source; Position	Time Unconscious	Pain	Cough	Haemoptysis	Signs in Chest	*X*-Ray Findings in Chest
1	Aerial bomb; 50 yards Prone	0	21 days; retrosternal	21 days	1st–12th days; intermittent	Nil 2nd, 5th, 7th–21st days	Nil 2nd, 6th, 12th, 15th days
2	Mortar bomb; 3 feet Facing	8 hours	5 days retrosternal; 10 days upper abdom.	11 days; blood	1st–11th days; intermittent	General rhonchi 1st–3rd days	Nil 1st, 2nd, 3rd, 9th, 10th, 11th days
3	Aerial bomb; 30 yards Facing	0	5 days; retrosternal	8 days mucoid sputum	3rd–10th days; intermittent	Cyanosis, hyperexpansion and general rhonchi 1st day; nil 2nd day or later	Nil 2nd, 6th, 9th days
4	Land mine; 4 yards Left side	5 mins.	3 days; right chest	5 days; mucoid sputum	4th–9th days; daily	Nil 1st, 3rd, 5th. 9th days	Nil 4th, 7th days
5	Land mine; "close" Supine	0	6 days retrosternal and back	5 days; bloody sputum	1st–5th days	Nil 1st, 2nd, 4th, 7th days	Nil 6th, 9th days
6	Mortar bomb; 5 yards Facing	5 hours	10 days; whole chest	5 days; blood	1st–5th days; daily	Generalized rhonchi 1st day; nil 3rd, 5th, 7th days	Nil 1st, 3rd, 8th days
7	Mortar bomb? ?	3 hours	7 days; whole chest, left arm	3 days; blood	1st–3rd days; daily	Generalized rhonchi 1st day; nil 3rd, 5th, 7th days	Nil 1st, 3rd, 5th days
8	Mortar bomb; 10 yards ?	5 hours	3 days; upper abdom., left back	3 days; dry	3rd day	Nil 1st, 4th, 6th days	Nil 4th day
9	Grenade; 3 yards Right side	Few mins.	5 days; right chest	3 days; frothy sputum	1st day	Nil 4th, 6th days	Nil 4th day
10	Grenade; contact Left side	"Short time"	7 days; left chest and arm	7 days; mucoid sputum	1st–4th days	Generalized rhonchi 1st day	Nil 1st day; right interlobar fluid 3rd day
11	Mortar bomb? Right side	0	8 days; left chest	1 day; bloody sputum	1st day for 6 hours	Nil 1st, 4th days	Increased density left lower zone 4th day
12	Aerial bomb; 25 yards Prone	0	4 days; left chest	5 days; mucoid sputum	1st day	Cyanosis, rapid breathing, no signs in chest, 1st day; nil 4th, 6th, 8th days	Opacities both midzones 4th day; nil 8th day
13	Aerial bomb? Back to	Few mins.	2 days; retrosternal	1 day; blood	1st day	Generalized rhonchi 1st day; dullness and diminished B.S. at left base 5th day	Opacity left lower zone 5th day; opacity clearing 8th day
14	Aerial bomb? ?	? hours	2 days; right chest	1 day	1st day	Dullness and diminished B.S. at right base 1st day; diminished B.S. and creps. at right base 13th day	Heavy opacity right lower zone, small opacity left midzone, 3rd day; clearing on right, left side clear, on 6th day; nil 12th day
15	Flying bomb? ?	0	10 days; whole chest	Chronic bronchitic	0	Left haemothorax 3rd day; aspirated	Left haemothorax; clear by 24th day
16	Shell; 20 yards Back to	0	15 days; left chest	10 days; dry	1st day	Left haemothorax 2nd day; consolidation left base 12th day; clear 23rd day	Left haemothorax 2nd day; consolidation 13th day; pleural thickening 22nd day
17	Mortar bomb; close In trench	Few mins.	7 days; left chest	3 days; dry	0	Nil 3rd day; dullness left base 14th day	Nil 3rd day; opacity left base 14th day; almost clear 17th day
18	Flying bomb; 20 yards Back to	0	4 days; retrosternal and back	3 days; dry	0	Nil 1st and 2nd days; dullness, diminished B.S., and creps. right base 3rd day; nil 4th day	Nil 2nd and 4th days
19	Mortar bomb; 3 yards Left side	3 hours	14 days; retrosternal, left chest	0	0	Nil 1st day; dullness and diminished B.S. left base 3rd day; nil 8th day	Opacity left base 3rd day; cleared 8th day
20	Aerial bomb? Prone	6 hours	14 days; left chest, back, upper abdom.	0	0	Generalized rhonchi 1st day; consolidation right base 4th day; resolving consolidation left base 14th day	Bilateral midzone opacities right > left. 4th day; opacity left base 14th day
21	Mortar bomb; 3 yards Crouching	0	10 days; upper back	0	0	Cyanosis, scattered creps. both lungs 1st and 2nd days; dullness and diminished B.S. at left base 9th day	Increased density left lower zone 9th day; nil 11th day

of those with penetrating wounds; perhaps they took heart of grace from their immunity to the repeated and sometimes fruitless needling suffered by their fellows. Over half the patients (12) were unconscious for a few minutes to several hours after injury. No abnormal physical signs in the central nervous system were recorded, and in no case was lumbar puncture performed. None of these patients complained of subsequent headache.

Dyspnoea.—This symptom was experienced by all, lasting from a few hours to several days after injury, but was not persistent. Painful respiration, however, in patients with muscular tenderness led to discomfort in transport and lasted from ten days to three weeks. "Tightness" and a "blown-up feeling" were expressions unhumorously used by many patients respiratory movement. Where the blast had been unilateral the upper-arm muscles on the injured side were apt to be affected.

Cough.—All but two cases suffered from cough; both these patients showed radiological evidence of pulmonary haemorrhage but emphatically denied cough as a symptom, nor did it occur while they were in this hospital. Coughing of frothy and sometimes blood-stained sputum for several hours after injury was common. After this the cough might become dry, or mucoid sputum would be expectorated for a few days. This symptom seemed to bear no relation to the intensity of radiological change. *Haemoptysis* occurred in 15 cases, and is discussed below.

Other Symptoms.—Epistaxis occurred during the first 24 hours after injury in Case 7. The tympanic membranes were

not inspected as a routine (the ear drums were examined only in Cases 1, 5, 11, 12, 16, and 17), but the only patient to complain of deafness was No. 11, who had a perforation of the right drum.

Physical Signs

Blood-pressure readings and pulse, temperature and respiration rates were recorded infrequently before admission to this hospital, but, with the exception of Case 18, the charts showed nothing remarkable after admission. This patient, whose temperature was 99°, pulse 88, and respiration rate 20 on admission, three hours after being blasted by a flying bomb, had a temperature of 104°, a pulse of 110, and a respiration rate of 36 fifty-six hours after admission. Examination then showed undoubted dullness and diminished breath sounds at the right base. Radiographs taken 24 hours before and 36 hours after this examination showed no abnormality, and agreed with an absence of abnormal physical signs at these times; it was thought that he had had a temporary partial collapse of the right lower lobe. He continued to have a low pyrexia—99 to 100°—for eight days after this, but the tachycardia and respirations subsided within 48 hours.

Generalized rhonchi were found commonly in those cases examined soon after injury, but lasted only for a few days. Cases radiologically clear on arrival here showed either nothing abnormal on physical examination (apart from muscular tenderness and limited respiratory excursions due to the pain) or the occasional rhonchus found in a large number of healthy chests. Dullness, diminished breath sounds, and decreased fremitus were present in those patients with heavy radiological shadows, clearing *pari passu* with the radiographs. Cases 15 and 16 had signs of effusion, and aspiration produced bloody fluid. Both haemothoraces cleared up with repeated aspiration.

X-Ray Findings

Ten of the cases showed no detectable abnormality in chest films taken within a few days of injury. Five of these were *x*-rayed within 36 hours of the incident, and in all but two patients a further film or films were taken later. Eleven cases showed radiological abnormalities in the chest at some time, and of these Cases 10 and 17, whose first chest films revealed nothing abnormal, developed respectively the appearance of interlobar fluid and a dense opacity in the left lower zone. Case 10, in which by the third day there was a shadow indicative of fluid in the right middle fissure, was not aspirated, but it seems likely that serous fluid or blood may have taken this time to accumulate. Case 17 had a clear film two days after injury, but a film taken on the fourteenth day showed a heavy opacity in the left lower zone, clearing remarkably quickly by the seventeenth day. Unless atypical pneumonia is postulated—and there was no corroboration by pyrexia or cough—this finding is difficult to explain, as even if haemorrhage into the lung is progressive the onset in this patient seems to have been very long-delayed. There was nothing specific about the shadows of the radiologically positive cases; they were unilateral in some instances, bilateral in others, and varied from increased density to the appearance of massive consolidation. All opacities were in the middle and/or lower zones, situated for the most part centrally. The shadows were confluent and not patchy. Phrenico-costal sinus pneumonia (Osborn, 1941) was not seen. Thomas (1941) has described hyperexpansion of the chest, but this was not a noticeable feature in the chest films of my cases. There seemed to be little correlation between the severity of the symptoms and the amount of damage as revealed by *x*-ray films. Tunbridge and Wilson (1943) are convinced that the extent of the haemorrhage is not always commensurate with the severity of the exposure to blast.

Haemoptysis

Haemoptysis has been an inconstant symptom of reported cases. None of those described by Dean, Thomas, and Allison (1940) coughed blood, though Hadfield (1941) found that haemoptysis commonly occurred an hour or so after injury. Livingstone (1940–1) reported occasional blood-stained sputum with loose cough. O'Reilly and Gloyne (1941) did not find haemoptysis to be persistent. It might be expected that haemoptysis would be related to the degree of haemorrhage—i.e., would occur in those cases showing massive *x*-ray shadows. This relation, however, was not found. Fifteen cases in all had haemoptysis at one time or another; of these, nine showed no radiological changes after injury. Of the 12 radiologically positive patients only six had haemoptysis, and, furthermore, only Case 10 coughed blood or bloody sputum for more than one day. Contrasted with these, six of the radiologically negative cases had haemoptysis for 12, 11, 8, 6, 5, and 5 days respectively. The accompanying Table, in which cases are arranged in order of persistence of haemoptysis, shows the inverse relation of this symptom to the incidence of massive haemorrhage as revealed by *x* rays. Those whose haemoptysis was of brief duration coughed bloody froth after injury, whereas those with prolonged haemoptysis brought up pure blood, sometimes with clots, intermittently. The following case is illustrative:

Case 2

On Aug. 8, 1944, a mortar shell fell on this patient's gun. He was facing the explosion and was unconscious for eight hours. He then had difficulty in breathing, and lower retrosternal and upper abdominal pain; he was also coughing blood-stained froth. On examination generalized rhonchi were heard in both lungs. Radiologically the chest was clear.

Aug. 10.—Still having frequent haemoptyses (pure blood). Generalized rhonchi in both lungs. *X*-ray films of chest clear. He continued to cough blood once or twice a day until Aug. 15. Before each haemoptysis he had pain under the right ribs anteriorly.

Aug. 15.—No haemoptysis.

Aug. 16.—Haemoptysis began at 5 a.m.; fairly copious, with small clots. A few sonorous rhonchi in both lungs. Radiographs of chest showed slight frosting of periphery of left mid-zone (indefinite). Evening temperature 99°. Pulse and respirations normal.

Aug. 17.—No cough or haemoptysis. No abnormal signs. Radiographs of chest clear.

Aug. 18.—Haemoptysis; coughing small clots from 11 a.m. to 4 p.m. Temperature, pulse, respirations normal. No abnormal signs in chest. Posterior rhinoscopy showed nothing abnormal. Chest films clear.

Aug. 23.—No further haemoptysis since Aug. 18.

Cases 1 and 3 pursued a similar course. A civilian (not included in this series) injured by an aerial bomb early this year had haemoptysis for three weeks with repeated clear radiographs.

Considering the discrepancy between the degree of haemorrhage revealed by *x* rays and haemoptysis as a symptom, it seems possible that the source of bleeding in those patients with clear films may be bronchial. It was not desirable to submit these patients to bronchoscopy, but further investigation into the source of haemorrhage in such cases would be instructive. Hadfield (1940–1) mentions a patient showing no external signs of injury who recovered from his more urgent respiratory symptoms in the course of a few days, but had four attacks of haemoptysis during the next seven weeks. He believes that the major clinical manifestations are more probably due to capillary dilatation than to actual bleeding into the lung, which may be a consequence of capillary dilatation, and considers that one result of the detonation of high explosive is that the lung is left in such a condition that it is liable to bleed intermittently for a considerable time after the injury. His case is similar to the three cases in this series in which there was prolonged haemoptysis, but if his explanation is correct it should follow that those patients who show signs and radiological evidence of extensive diapedesis or capillary rupture would be the most likely to have prolonged haemoptysis.

Unilateral Lesions

Zuckerman (1940) has shown that rabbits exposed to lateral blast, the opposite chest being protected by cotton-wool, suffer more severe damage to the lung on the exposed uncovered side and less severe damage to the contralateral lung. Clinical reports of cases, so far as I am aware, have not stressed unilateral lesions; these were not likely to occur as most of the reported cases have been due to injury by aerial-bomb blast. Many of my cases were blasted by less powerful sources—e.g., mortar bombs or grenades—and some appeared to have been affected by the close-range detonation on one side only. Eight patients had unilateral abnormalities as shown by radiograph, although in some of these cases minimal lesions on the other side may have cleared by the time the films were taken. Five patients said that they were sideways-on to the explosions, and of these

three gave unilateral shadows, the remaining two being radiologically negative. It seems reasonable to assume that, whatever the effect on the lungs, pain and tenderness of the chest muscles should occur on the side facing the explosion; but in two of the five cases (Nos. 4 and 11) pain with or without tenderness was experienced on the side opposite to that described as facing the explosion. The remaining three cases had pain on the exposed side, the following case presenting the anomaly of muscle tenderness limited to the arm and chest facing the detonation, with fluid appearing in the opposite interlobar fissure.

Case 10

This patient was injured on Aug. 8, 1944, by a hand-grenade which struck his left shoulder and exploded on or close to him. He was unconscious for a short time. On coming round he noticed soreness of the left chest and shoulder, and was coughing bloody sputum. On examination there was obvious dyspnoea, with generalized rhonchi in both lungs. Chest radiologically clear.

Aug. 9.—Still coughing blood-stained sputum.

Aug. 11.—Cough and haemoptysis. Pain in left chest and arm. Radiographs gave an appearance of a small effusion in the right middle fissure.

Aug. 12.—No change radiologically.

Aug. 15.—Some pain in left chest on breathing. Occasional cough; mucoid sputum; no haemoptysis. Examination disclosed tenderness in the left pectoralis major and shoulder-girdle muscles. No abnormal signs in lungs. Radiographs revealed only a small amount of fluid in the right middle fissure.

It would be unwise to draw conclusions from the case histories, for the evidence seems contradictory in two instances: No. 4, whose history was of a land mine exploding on his left side, the subsequent muscular pain and tenderness being on the right; and No. 11, who gave a history of a mortar bomb exploding on the right and presented the anomalous combination of a recent perforation of the right drum, the left being intact, and pain and tenderness of the left chest with radiological evidence of increased density of the left lower zone. Nor were any of the cases with unilateral histories and lesions comparable to Zuckerman's animals, for their chests were not protected on one side, and the blast may well have been received obliquely. Case 10, however, would seem to suggest the possibility of a contrecoup lesion if it were not for the difficulty of accepting such an effect on an organ so elastic as the lung.

Treatment

Treatment should be for the symptoms. Hadfield (1940–1) has emphasized the importance of adequate rest. None of these patients developed pneumonia—a not uncommon complication according to O'Reilly (1941); many of those showing evidence of massive pulmonary haemorrhage had been given up to 20 g. of a sulphonamide by the Army method of dosage of 5 tablets (2½ g.) twice a day during the first few days after injury, and this may well have prevented the complication. Physiotherapy would seem to be indicated for the muscular pain which is so prominent a symptom, followed by breathing exercises, but owing to pressure of more urgent work this could not always be carried out.

Summary

Twenty-one cases of blast injury to the lungs uncomplicated by other types of trauma are presented; the symptomatology, signs, and radiological findings are detailed. Haemoptysis as a persistent symptom is shown to bear no relation to the degree of pulmonary haemorrhage as manifested radiologically. Unilateral exposure to blast and the resulting lesions are found to have no constant relations; but in one case the possibility of contrecoup injury is mooted.

I would like to express my thanks to Dr. Geoffrey Doel for the x-raying of these patients and for his helpful co-operation at all times. I am also indebted to R.A.M.C. officers concerned for the early notes of the cases and in many instances for radiological investigations soon after injury.

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AN OUTBREAK OF JAUNDICE WITH SIGNS IN THE NERVOUS SYSTEM

BY

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In the steadily growing literature on infective hepatitis there is scant reference to lesions in the nervous system. In a series of 170 cases studied by Cameron (1943) the only neurological sign noted was a temporary paresis of accommodation in two cases. Newman (1942) refers to severe headache and to the occasional occurrence of paraesthesiae in the limbs. In none of his cases was the cerebrospinal fluid examined. Brain (1943) refers to one case in which unilateral convulsions and a hemiplegia, together with mild polyneuritic signs, preceded the onset of jaundice. Lescher (1944) gives three references to single cases of meningitis associated with infective hepatitis and describes two cases. A housewife aged 28 during an epidemic of infective hepatitis developed signs of a generalized polyneuritis which was followed one week later by jaundice; recovery was complete. In the second case an R.A.S.C. driver suddenly developed a left hemiplegia two months after an attack of epidemic hepatitis, from which he had made a complete recovery; there seems little justification for associating these two illnesses.

History of the Outbreak

The cases which are the subject of this note show the association of lesions of the nervous system with jaundice in several individuals living in close proximity. In Sept., 1943, a casualty clearing station in the Arakan, on the Burma front, was receiving a few cases of infective hepatitis each week, differing in no way from the usual type. Within two days 5 cases of jaundice with unusual neurological symptoms and signs were admitted. Four of these patients were from one British regiment and the fifth was an officer who had been working with this unit.

The history and clinical findings in four of the cases were very similar. The onset of the illness was sudden, occurring while the battalion was marching down to relieve another in the front line. All four men went sick within 48 hours of each other, with severe headache, dizziness, and a rise in temperature to about 104° F. Pain behind the eyes and generalized body pains, worse in the neck and in the back, were constant features. A "pins and needles" or tingling sensation rapidly developed in the arms and legs, with loss of muscular power, particularly in the lower limbs. Some degree of dimness of vision was noticed by each of the patients.

The fever lasted two or three days. A moderate jaundice developed on about the fourth day. When examined at the C.C.S. 10 days after the onset the following signs were noted. All four men were mildly jaundiced and bile was present in the urine. The liver was tender and enlarged and the spleen was palpable in all cases. The total and differential white counts were normal. The men complained of dizziness, dimness of vision, unsteadiness, and weakness of the limbs. On attempting to walk they staggered. During the first few days of the illness Kernig's sign had been reported as positive; a slight degree of neck rigidity still remained. The fundi were normal apart from a fullness of the veins in three cases. The remaining cranial nerves were normal. There was no loss of power, and no incoordination was present in the upper limbs. The arm and abdominal reflexes were normal. The lower limbs showed varying degrees of muscular weakness. The knee-jerks were diminished, though unequally on the two sides; in one case the right knee-jerk was absent. The ankle-jerks were absent. The plantar responses were flexor, except in one case which showed equivocal responses. In two cases there was definite sensory loss in the thigh—in one case on the anterior surface and in the other along the posterior surface. The cerebrospinal fluid was abnormal in three of the cases. In two a clot developed 15 minutes after the fluid had been withdrawn. The protein content was increased in three cases. Cell counts were 23, 14, and 11 lymphocytes per c.mm. The Wassermann reaction was

negative in all the fluids. Sera of these cases gave negative results on agglutination with the leptospira of Weil's disease.

The patients were evacuated to base hospitals, where three of them made a complete recovery within two months. The other two cases developed sequelae, as described below.

Case IV

C.S.M. J., aged 32, was seen by Major A. D. Leigh, R.A.M.C., neurologist, in Dec., 1943, three months after the onset. The following notes are extracted from his report. The patient complained of weakness and numbness in the legs. There was no jaundice and the liver was not palpable. The pupils and cranial nerves were normal. There was slight weakness of both hand-grips, with exaggerated reflexes in both limbs. Blunting to cotton-wool and pinprick was present on both hands. Power in both lower limbs was diminished, more particularly in the right leg. Muscle tone was increased in both legs and the gait was mildly spastic. The deep reflexes were much exaggerated, except the right ankle-jerk, which was diminished. The plantar responses were flexor. There was diminished sensation on the outer side of both thighs and over the dorsum of the feet, with absolute loss on the toes. The cerebrospinal fluid was normal. The patient was invalided to the U.K.

Case V

On Sept. 2, 1943, Capt. R., aged 33, complained of sore throat. On the 9th he had a rigor, which recurred despite quinine. On Sept. 14 he was admitted to an M.D.S., where his urine was noted to be dark in colour. The next day he complained of pains in the calves and thighs, and these were followed by loss of power from the hips downwards. On Sept. 17 there was a complete flaccid paraplegia, with anaesthesia below the groins. The patient complained of pain in the right arm, and on examination weakness of abduction was noted. There was no complaint of headache. On Sept. 19 he was admitted to a C.C.S.; he vomited several times that day. The next day he complained of headache, pain in the back, and blurring of vision with the onset of fever. There was difficulty in emptying the bladder. Jaundice was now present and the liver was enlarged and tender. The C.S.F. showed no increase in cells and the protein content was normal. The white cells numbered 9,000 per c.mm. Improvement was noted during the next few days, and on Oct. 2, on arrival at a field hospital, a considerable return of power and sensation had taken place in the left lower limb and, to a less degree, in the right. By the end of October no weakness of the right arm could be detected. The abdominal reflexes were normal. There was weakness of flexion of the right knee and of dorsiflexion of the right foot. Tone was increased in the right leg, particularly in the tendo Achillis. There was no appreciable wasting, and sensation was normal. The deep reflexes were exaggerated in the lower limbs, more particularly on the right side. There was unsustained right-sided ankle clonus, and the right plantar response was equivocal, while the left was flexor. By the middle of November power had further returned in the right leg, and the plantar response was now flexor. The patient was evacuated to the U.K.

Discussion

In four of the five cases described above an abrupt onset of fever, generalized pains, and signs of a mild meningitis were quickly followed by blurring of vision, weakness, and paraesthesiae in the lower limbs. In the fourth case pyramidal signs were subsequently noted, while in the fifth case the signs were predominantly those of a myelitis. Jaundice associated with enlargement of the liver and spleen appeared in all cases between the 4th and 6th days of the illness. Recovery was rapid and complete in three of them. In the remaining two a mild residual spastic paresis of the lower limbs, with in one case sensory loss peripherally, was still present several months later.

In considering the aetiology of the nervous signs in these cases acute poliomyelitis need be considered only in Case V. In Sept., 1943, only a single case of this disease was reported from this part of the Burma front. Furthermore, the myelitic form is distinctly rare, and it is unusual in such cases for recovery to be so rapid and the sequelae so mild. The normal cerebrospinal findings on the fifth day of the disease are also unusual. Since another case with mild myelitic signs occurred in the series, and since there were features in Case V rarely seen in acute poliomyelitis, this has been included.

The jaundice appeared to be of the usual infective type, especially since other cases from the same area were seen at that time. Assuming that these men suffered from infective jaundice, the question of neurotropism of the virus causing this condition must be considered. It is known that, experimentally, hepatotropic and neurotropic elements may coexist in viruses—e.g., yellow fever. On the other hand, taking into consideration the widespread distribution of infective hepatitis during the present world war and the extreme rarity of nervous complications, it is doubtful whether neurotropism of this virus can be accepted as the explanation in these cases. There remains the coincidental association of two diseases—a not uncommon event in the East. Encephalomyelitis, to which one case bears some resemblance, although not uncommon in peacetime, has been rare in the Army in India during the present war. We have not attempted to give a label to the neurological picture which these cases presented, but have indicated that meninges, spinal cord, and peripheral nerves were affected in varying degree.

Summary

A description is given of a small outbreak on the Burma front of a condition characterized by the association of jaundice with meningitis, peripheral neuritis, and, less constantly, myelitis.

The relationship of these conditions is briefly discussed.

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A SOCIAL STUDY OF HOSPITAL TREATMENT

BY

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AND

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Anyone with experience of modern hospital work knows that facilities for in-patient treatment are limited. It is therefore important that they should be used to the best advantage. Also, all those who deal with the sick know something of the impact on family life made by a serious illness, but few realize how it is borne. The present study is an attempt to assess the value and efficiency of the in-patient service of a general medical ward, and to discover how such a misfortune as a hospital illness is met by the patient.

The Patients Studied

Contact was made with all the patients who had been admitted to Collier Ward during a period of six months to see how far medical and social care had been adequate to meet their needs. The period between Aug. 1, 1941, and Jan. 31, 1942, was chosen because during that time one of us (M.B.) had been house-physician.

Collier Ward is divided into accommodation for 10 men and 11 women. It is attached to the Nuffield Department of Clinical Medicine, and although when it was opened in 1938 it was mainly intended for scientific investigation and research, by 1941 it was also taking its share in the clinical teaching of students and the general work of the hospital. The ward was staffed with a sister, seven nurses, and a house-physician, and the bed costs for the six months under review were £2,280.

The follow-up was begun in Feb., 1943, and a letter was sent to each of the 156 patients explaining the nature of the investigation and asking for their co-operation. Wherever possible the social worker (F. C. C.) then visited the patients, discussed the social implications of their illness, and arranged for them to come up to hospital for a medical examination. Seventy-two patients were visited in their own homes; 51 attended for medical examination; 31 lived too far away for a visit, but sent a letter and report from their own doctor. Only 6 remained untraced, and of these one was an evacuee, one a tramp, and two were from a near-by construction camp. Notes were made on the medical and social aspects of each case, and when the record was complete the questionary shown in Table I was filled in. All but two of the patients were delighted to hear from the hospital and know the staff were interested in their progress. They gave us unlimited co-operation.

TABLE I.—*Questionary used in the Follow-up and a Summary of the Answers*

Total number of cases		156
Dead	29	35
Untraced	6	
Number included in the questionary		121

	Yes	No
Medical		
1. Is the patient still suffering from the disease which caused admission?	82	39
2. Is any present incapacity due only to a psychogenic overlap?	8	—
3. Did the follow-up visit end in a suggestion as to treatment or supervision?	31	90
4. (*a*) Is hospital treatment still necessary?	47	74
(*b*) If so, is it being given?	36	11
5. (*a*) Is other medical care still necessary?	35	86
(*b*) If so, is it being given?	29	6
6. Was patient seen by family doctor after discharge?	105	16
Social		
7. Is the patient now (*a*) employed in full-time work?	72	
(*b*) employed in part-time work?	30	
(*c*) totally incapacitated?	19	
8. Was the period of incapacity caused by the illness greater than three months?	98	52*
9. Was the stay in hospital longer than three weeks?	66	90†
10. Was the period of incapacity after discharge greater than three months?	73	48
11. Could this period (10) have been shortened by:		
(*a*) fuller co-operation of patient or family?	11	
(*b*) closer hospital supervision?	13	
(*c*) financial help?	5	
(*d*) occupational therapy?	6	
(*e*) other services?	19	
12. What were the sources of income during illness?		
(*a*) Wages paid by employer during illness	23	
(*b*) Insurance	64	
(*c*) Savings	32	
(*d*) Family funds	82	
(*e*) Public funds	16	
13. If the patient is not working full time now, what are the sources of income?		
(*a*) Pay from part-time work only	3	
(*b*) Insurance	6	
(*c*) Savings	6	
(*d*) Family	38	
(*e*) Public funds	2	
14. When the patient was a housewife, were reasonably adequate arrangements made for the care of the rest of the family:		
(*a*) during illness?	44	4
(*b*) during convalescence?	40	8
(*c*) at present time if still incapacitated?	21	3

* All the patients traced—i.e., 150—are included in the answer.
† All of the 156 patients are included in this answer.

All but 5 of the patients were civilians, drawn mainly from Oxford and the large rural area surrounding it. More than a third came from the country, and many of the Oxford townspeople have the outlook and attitude of country folk. Among those from the town 10% were evacuees from London. Eight per cent. of all patients were sent for diagnosis from considerable distances outside the usual area.

The housing conditions of patients, from both the urban and the rural areas, were good on the whole. The majority of our patients came from neat semi-detached houses with pleasant gardens and reasonable rents, or from country cottages with somewhat primitive sanitation but ideal positions and rents of a few shillings a week. There was little evidence of overcrowding or bad conditions.

Results of Treatment

Table I gives a summary of the medical and social status of the patients who were alive at the end of a year. Twenty-nine (19%) patients had died, 82 (55%) were still suffering from the disease which had caused admission, and another 8 (5%) were incapacitated because of psychogenic symptoms which remained after cure of their organic disease. Thirty-two (21%) patients had been admitted to other hospitals, 38 (25%) were still receiving out-patient care, and another 10 (7%) needed it. Almost as large a number required attention from their general practitioner. During six months the ward had cured only 39 (26%) of the patients admitted. For the majority of the patients the stay in hospital was merely an episode, sometimes a relatively brief episode, in a protracted period of disability and treatment.

A better impression is given if we show how many of the patients had returned to their occupations. Whereas only 39 (26%) could be considered cured in the strict medical sense, 72 (48%) had been able to return to full-time work, and 30 (20%) were doing part-time work. The group of patients with blood diseases did better than the others, while those with lung disease were much the worst.

For the purpose of this study the patients were divided into groups in three ways: (*a*) those under 45 years of age were compared with those of 45 and over; (*b*) those whose stay in hospital was 21 days or less were compared with those who were in hospital for longer periods*; and (*c*) those whose total period of incapacity was 3 months or less were compared with those who were incapacitated for more than 3 months. The results showed that patients under 45 years have a better chance of returning to full work than those who are older, and that the patients who stayed in hospital less than three weeks and those whose entire illness lasted less than three months had a better chance of recovery than the others. These facts are not surprising, but their implications are important.

Use of Available Bed Space

If the services of a well-equipped diagnostic ward are to be used to the best advantage the patients must be selected for suitability for admission, and they must be discharged as soon as practicable after the diagnosis has been made and such treatment as can be given in this type of ward has been completed. Little fault can be found with the choice of patients for admission. In the present state of hospital waiting lists it would be more appropriate to comment on the many suitable cases which fail to gain admission than on the few unsuitable ones which do. Of the patients who were traced, 99 had been admitted from the waiting list compiled in the out-patient department, and the remaining 51 were admitted as emergencies on the days when the ward was "on take."

Of those from the waiting list 73% had returned to work at the time of the investigation, whereas only 55% of the emergency admissions were working. This difference is probably due to the type of illness rather than the method of selection. In cases of emergency no request for the admission of a patient was refused, so that the decision was solely in the hands of the general practitioner. Only two of the patients admitted in this way did not require special investigation or treatment. One was a patient with disseminated sclerosis whose home conditions necessitated removal, and the other was a mild case of gastro-enteritis. Only one case was clearly hopeless—that of a woman with carcinomatosis—and here there was some possibility that radiotherapy would alleviate her pain. The record as a whole justifies the choices of the general practitioners. It is clear, then, that faulty selection of patients was not the cause of much waste of bed space.

If, however, we turn to the circumstances which governed the discharge of patients we find that there were many defects. There were 25 (16%) whose discharge had been delayed beyond the time they needed special treatment, and this involved the waste of 680 bed-days. The chief cause of delay was the lack of suitable institutions for the care of patients who needed only general nursing and possibly a special diet. To such a hospital some of our patients with peptic ulcer, for instance, could well have been sent for a month and then readmitted for a review of their condition, and the old people with bronchitis and asthma would have done as well in simpler surroundings. The patients of this type who had to be kept in the ward long after they required the special services it provided are listed in Table II. There was a smaller group

TABLE II.—*Causes of Undue Delay in Discharge from Hospital*

Absence of an institution providing nursing care and/or diet:	
Peptic ulcer	3 cases
Bronchitis and asthma	2 „
Chronic empyema	1 „
Chronic nephritis	1 case
Thyrotoxicosis; fibroids	1 „
Rheumatic fever	1 „
Meningitis	1 „
Undiagnosed cases	3 cases
Delay in supply of special services: radiotherapy, surgical specialists, etc.:	
Leukaemia and reticuloses	4 cases
Pulmonary Tb.	1 case
Carcinoma of lung	1 „
Renal stone	1 „
Essential hypertension	1 „
Delayed admission to another hospital:	
Psychoneuroses	2 cases
Tuberculous effusion	1 case
Diabetes; cataract	1 „
Estimated waste of bed-days: 680	

* Patients with diseases of the blood were not considered in the second analysis because they were usually studied for research purposes and were kept in hospital for observation longer than their condition demanded.

whose stay was unduly long because some special service was unavailable. It would be unreasonable to expect every facility to be available immediately it is required, and this has not been the standard. Rather, included in the group were those who had to wait two to five weeks for radiotherapy or who had to wait a fortnight or longer for the surgical specialist. A third group of cases was held up because it was impossible to arrange for their admission to a special hospital within a reasonable time. The war, with the crowding of hospitals which it caused in this area, was of course partly responsible for this, and in any event the group was small. All three of the causes of delayed discharge from hospital were beyond the control of those in change of the ward, but an analysis of this defect in the general organization of hospital services gives an indication of the importance of the problem. The time required to treat the 83 (55%) patients who were in hospital for three weeks or less was 879 days, and 58 (70%) of them returned to full work. If the beds had not been blocked by the 25 patients listed in Table II it might have been possible to treat another 65 acute cases and so to increase by more than 50% the number of patients who returned to full-time work. If this had been possible it might have meant an increase in the staff both in the ward and in the laboratories, etc., but this would have been justified in order to make the special ward facilities available to a greater number of patients.

After-care Facilities

The after-care arrangements which were made for these patients were often inadequate. During the time that these patients were in the ward many of the convalescent homes were closed on account of the war or reserved for special purposes, so that the type of convalescence which was provided is not a fair sample of what might be arranged for a similar group in peacetime. Convalescence lasting from a few days to 12 weeks was arranged for 22 patients. The average stay was 4 weeks. The majority were sent to small cottage hospitals near their homes so that they could be under the care of their own doctors, but sometimes it was impossible to arrange this. Although full particulars were sent with each case, the link between the hospital and the local doctor seems to have been deficient. Many patients were only too aware of the break in the continuity of treatment, and felt on the one hand that the specialists were no longer interested and on the other that the convalescent hospital did not understand their illness. Three of the patients took their own discharge before their convalescence was completed. The absence in the small hospital of many of the concomitants of specialized medicine probably played a part in this feeling. It was impossible to tell how far the criticisms were really justified, but even their presence was disturbing. They point to the necessity for careful explanation of the circumstances before the patient leaves the key hospital and a closer connexion between the doctors concerned than is provided by a case sheet.

There was unrest on other grounds. A great difference existed between the quality of the food in the Radcliffe Infirmary and that in the smaller hospitals. Good diet—and rightly so—takes a high place in the patient's idea of convalescence, but the food in these smaller hospitals was often much inferior to that supplied at the Radcliffe Infirmary, and special diets were sometimes unobtainable. Younger patients sometimes found themselves in a ward full of the very old. For instance, a boy recovering from rheumatic fever spent three months in a room with six beds, of which only one was occupied by a young man during part of his stay; all the other patients were old and infirm. At first he was unable to read because he was flat on his back, but no attempt was made to provide any diversion.

There was often resentment if it was necessary to send a patient to a hospital far from his home, even when the stay in the Radcliffe Infirmary, almost as far away from relatives, had led to no discontent. Several times one met the argument from members of the Hospital Contributory Scheme that as contributors they had a right to a bed in the Radcliffe Infirmary and should not be sent somewhere else. On the other hand one patient who went to a seaside convalescent home was most enthusiastic about the care he received and the value of a real change of surroundings. All of these are points of general application, some of which could be remedied by institutional reorganization, and some of which must be met and solved by a study of each case.

Six patients would probably have returned to work sooner if convalescent treatment had been provided. Two of these were women who refused to allow arrangements to be made because they were worried about their homes. Two men with peptic ulcer went home to unsatisfactory diets, partly the result of their poverty. A woman with a breast-fed baby was a contingency for which no provision could be made at short notice. Another woman, who was referred to the psychiatric clinic and needed a period of rehabilitation, returned home to be nursed by her mother, an over-possessive person partly responsible for her daughter's psychoneurosis. Thus the shortage of beds for convalescents was the cause of incomplete treatment in four of these cases, and lack of provision in the home when the mother was ill was the cause in the other two.

Time and facilities for closer follow-up, and financial help, would have aided the recovery of another sizeable group of patients (Table I, Question 11). For instance, some who did not follow instructions after discharge might have been persuaded to do so. In three cases poverty made proper care impossible. At least 12 patients would have been benefited if occupational therapy had been provided during their incapacity. In 6 of them the return to work might have been accelerated; others might have had their interest aroused in the ward, and the work could have been carried on at home to avert boredom. For some this would have been an activity which would have continued through years of incapacity.

Provision for housewives during illness and convalescence is a special problem. Several would have been helped by such services as residential nurseries for their children, home helps and other forms of social care. Many expressed the wish that there was an insurance scheme for them. The husband's weekly wages often do not go far when he or a neighbour does the shopping, and the housewife in hospital worries about the family budget. All those who belonged to the District Nursing Association spoke most highly of the service. There seems no reason why a Home Help Service for the convalescent and semi-invalid housewife should not be run on similar lines.

Social Adjustments during Illness

When studying the social effect of illness involving admission to hospital it is necessary to know something of the make-up and background of the group of patients. Their occupation will give some indication of this. Of the 156 patients admitted 91 were gainfully occupied; 28 of these were women employed in domestic, professional, clerical, and factory work. The remaining 65 patients in the series were housewives or children. The group of 91 workers was divided as follows:

Domestic workers	11
Labourers	14
Clerks and shop assistants	15
Farm workers and gardeners	14
Skilled workers	21
Professional workers	11
H.M. Forces	5

Omitting the 5 Service cases, 66% were urban workers and 34% rural workers. Twenty of these patients died. Nineteen of them were men, of whom 10 were urban workers, 8 rural workers, and 1 in H.M. Forces.

On the whole the patients came from a stable population and, apart from those who had come to Oxford on account of the war, most of them belonged to families who had lived in the neighbourhood for several generations. Family ties appeared to be strong, and many patients relied upon their relatives to help them during their illness. The expense of hospital treatment had largely been provided for by membership of a hospital contributory scheme. Seventy per cent belonged to the Radcliffe and Associated Hospitals Contributory Scheme or a reciprocal scheme, and while the funds obtained in this way did not completely cover the cost of treatment contributors must be considered to have borne a major part of the expense. Only 8 patients were unable to pay anything or were on public assistance.

The means of meeting the expenses of medical treatment and the running of the home are listed in Table I, Question 12. Only 5 patients applied for public assistance; another 11 were eligible for special grants from local authorities. Other State funds, such as the N.H.I. benefits, were of course obtained in the usual way, although by themselves they were quite inadequate to meet the needs of a long illness. Only 32 had enough savings to tide them over the crisis, and in a great many instances other members of the family rallied round during the illness. This illustrates the strength of family ties, and it is significant that of the 5 who found it necessary to apply for public assistance, 4 were single persons with no family backing.

For those patients with a high standard of living the inadequacy of benefit is pronounced in spite of sick clubs and savings. But the most striking examples of the inadequacy of the benefit are the cases where the man with a young family is sick. One of our patients suffering from a peptic ulcer, who had a young child and whose wife was pregnant, had his benefit supplemented by the Public Assistance Committee. He felt ashamed of having to apply for relief, and although he felt ill, dared not go to a doctor for fear of being put off work. This abhorrence of obtaining relief through the Poor Law is deeply ingrained, and adequate provision should be made through insurance for the whole family when the bread-winner has the misfortune to be ill. Employers, particularly the farmers, were generous to their workers during their illnesses, and 23 were given their full wages throughout the entire period. Many others had generous allowances.

Examination of the sources of income for the 49 (40%) patients who were not working full time (Table I, Question 13) showed that the incapacitated also relied mainly on family support. There were only 2 (4%) patients on public assistance, but only 10 (20%) had adequate pensions, savings, or sufficient pay from their part-time work to maintain themselves. The great majority (76%) relied on assistance from relatives. One of those on public assistance—a young woman who had been ill since contracting infantile paralysis in childhood—had never been taught a craft, and although she could have done some dressmaking and had a sewing-machine, regulations would not allow her to supplement her allowance by earning, and so she preferred to leave her machine idle and be sure of her weekly grant.

Value of a Long-term Follow-up of this Type

The review of this group of patients led to some addition to treatment in 31 (25%) cases (Table I). There were a few instances where a new development in the patient's condition required direction. In others the treatment prescribed on discharge needed to be started again. Each patient was questioned to find the effectiveness of liaison with the general practitioner (Table I, Question 6). On the whole it was satisfactory, and the majority of our patients had been seen by their family doctor soon after discharge. Despite this a few major aberrations were discovered. For instance, one patient with auricular fibrillation who had been sent out on digitalis therapy was dismissed by her doctor in a few weeks, and was found to be so ill when she visited the hospital that her name was put down for readmission. Another woman, who had left Oxford—a case of pernicious anaemia—had not had an injection of liver extract for more than a year. Altogether, readmission to hospital was recommended in 3 cases, out-patient treatment in 9, a surgical consultation in 2, and 6 were referred to their own doctors.

There were equal opportunities, some of which have already been mentioned, to improve the social management of a number of cases. Because of ignorance of the arrangements some patients had not received benefits to which they were entitled—statutory benefits as well as those from voluntary agencies. Several men had not understood national health insurance, and gave up when they got muddled in the procedure of application. There was some acute need at the end of a year in 15 (12%) cases, and the steps taken to meet it included such things as the provision of dentures, the arrangement of meals for a child, reference to a mental welfare worker, and the direction to training centres of several patients who were fit but not employed.

When this group of patients was in the ward the Almoner's Department consisted of 3 trained almoners, 2 senior clerical assistants, and a shorthand-typist, and it had to deal with a 500-bed hospital as well as out-patient clinics. Understaffed as it was, it gave help to 25 patients covered by this study. Looking back, it was clear that 36 more patients needed help which only the hospital could provide, and another 23 might have been referred to other agencies for assistance. Thus 70% of the patients required supervision if full use was to be made of existing social agencies and if recovery was to be as rapid and comfortable as possible.*

For purposes of clinical research it is probable that follow-up studies are of little value except when specific conditions are the subject of special investigation. This fact has perhaps made the hospital physician less conscious than he should be of the importance of the follow-up as a part of the patient's treatment. Our study has shown that only a small proportion of patients are completely and speedily cured as a result of admission to a medical ward. For the majority of them it constitutes a short episode in a long period of disability, and unless in-patient treatment and after-treatment are closely integrated, much of the benefit of the stay in hospital may be lost. Some of the defects we have noted would be remedied by an improved regional hospital organization in which the key hospital occupied a central position and the auxiliary and special hospitals, sanatoria, and convalescent homes took their places as equally important parts of the whole plan. The greater part of the patient's difficulties, however, would still remain.

It is our conclusion that the social problems which face patients who are admitted to hospital are so numerous and important that they demand attention. They are closely related to treatment, and unless patients are given adequate social care during the period of rehabilitation they may find it difficult once again to take their place in society. This care should be available at each stage of recovery until the optimum adjustment has been reached. It will involve liaison with many social agencies. A study of the type we have presented does not in any way take the place of this continuous care, but it serves several useful purposes. First, it draws attention to defects in hospital organization; secondly, it is an opportunity to discover patients' attitudes to the hospital service; thirdly, it reviews the correlation between the services inside and outside the hospital; fourthly, it enables individual patients to be helped where medical or social care has been inadequate; lastly, it indicates changes which can be made to benefit future patients.

Summary

150 consecutive patients who had been treated in a general medical ward in a teaching hospital were followed up 12 to 18 months later.

Only 26% had been cured, though 48% had returned to full-time work and 20% were doing part-time work.

Age over 45 and an illness of over three months' duration are bad prognostic signs.

Delay in discharge of patients from hospital because of the absence of suitable institutions for the care of long-term sickness is an important cause of wastage of bed space.

Arrangements for convalescent treatment and rehabilitation were defective, and, on the whole, cottage hospitals proved unsuitable for convalescence.

Contributory schemes and assistance by relatives are important factors in taking the financial strain of illness in this area.

In retrospect it is clear that 70% of the patients required supervision after discharge if full use was to be made of existing social agencies and if recovery was to be as rapid and comfortable as possible. This type of supervision could be given by an almoner, with reference of selected cases to medical officers.

Grateful acknowledgment is made to Mr. A. G. Sanctuary, administrator, Radcliffe Infirmary, for permission to make this investigation, and to Miss Helen Rees, chief almoner, and Prof. L. J. Witts for their interest and help.

* Since this study the Almoner's Department in the hospital has been augmented by 1 part-time and 4 full-time almoners and additional clerical assistance. An almoner is now attached as social worker to the Nuffield Department of Clinical Medicine. A voluntary worker skilled in handicrafts also visits the ward and guides those patients who are able to benefit by simple occupational therapy. It is hoped to carry out another follow-up of this type at a later date to discover what has been the effect of these changes.

PULMONARY ACARIASIS IN MONKEYS

BY

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In view of the attention recently directed to the possible significance of mites in the causation of certain pulmonary disorders such as asthma, bronchitis, and "eosinophil lung" in the Tropics (Soysa and Jayawardena, 1945; Carter, Wedd, and D'Abrera, 1944), it may be of interest to refer to earlier observations on pulmonary acariasis in monkeys, since this condition is probably known to but few medical men.

Some Observations on the Condition

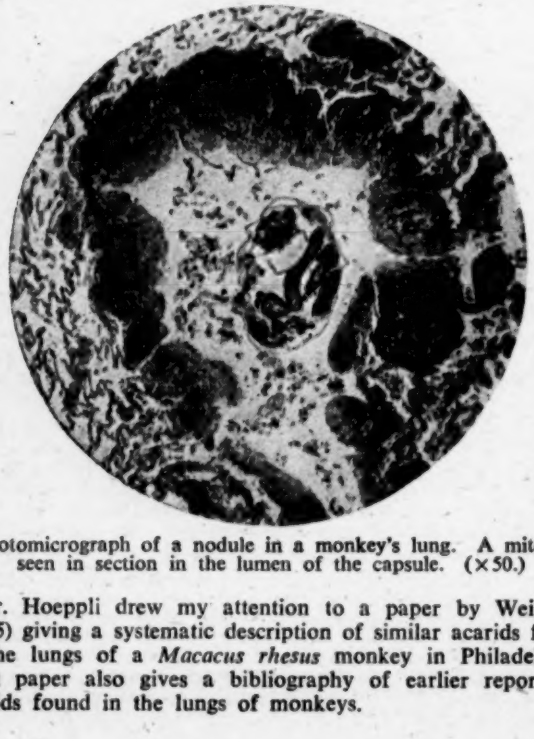
I first became aware of the phenomenon in 1933. When dissecting a *Macacus* monkey in Hong Kong I noticed small nodules scattered through the lungs. To the naked eye they resembled early tuberculous foci, although no other manifestations of tuberculosis were seen. On teasing out some of the nodules minute arthropods were found, which were subsequently identified by Dr. R. Hoeppli, of the Peiping Union Medical College, as mites probably belonging to the genus *Pneumonyssus*. The histological appearances are as follows:

The nodules consist of capsules, the walls of which are composed of cellular granulation tissue. The lumen of each capsule is lined by epithelial cells and usually contains an arthropod lying among cellular detritus. The tissue comprising the walls of the capsules consists of fibroblasts, leucocytes, eosinophils, plasma cells, and endothelial cells. Very little formed fibrous tissue is seen and no giant cells have been noted. A constant feature is the presence of heavy pigmentation due to granules lying within histocytic endothelial cells. This pigment does not give a ferrocyanide reaction, and since it closely resembles similar pigment visible within the gut of the parasites it is probably of faecal origin.

The eosinophils do not appear to be more numerous than is commonly seen in granulation tissue. Unfortunately, no haematological studies were done, so it is not known whether an eosinophilia was present in the peripheral blood.

The nodules are generally in close proximity to bronchioles, but in no instance could direct continuity be detected between a bronchiole and the lumen of a capsule. The surrounding lung tissue on the whole has a healthy appearance, although vascular congestion is excessive and erythrocytes are present within the alveoli in some areas.

The general features of a typical nodule, with a mite lying within it, may be seen in the accompanying photomicrograph.



Photomicrograph of a nodule in a monkey's lung. A mite is seen in section in the lumen of the capsule. (×50.)

Dr. Hoeppli drew my attention to a paper by Weidman (1915) giving a systematic description of similar acarids found in the lungs of a *Macacus rhesus* monkey in Philadelphia. That paper also gives a bibliography of earlier reports of acarids found in the lungs of monkeys.

Comment

The demonstration in monkeys of pulmonary lesions due to mites might be held to lend strong support to the concept of pulmonary acariasis in man. It should be borne in mind, however, that the life histories of the species of mites infesting the lungs of monkeys have not been established (so far as I am aware), and that it is not improbable that these mites may normally exist as ectoparasites on the skin of the host. Should this be the case, the habits peculiar to simians present an obvious explanation of how the parasites may readily be aspirated into the air passages. Nevertheless, if man be exposed to environmental conditions resulting in the aspiration of extraneous mites, it would be reasonable to suppose that, as in monkeys, structural lesions may ensue. That such lesions may give rise to symptoms requires no great stretch of imagination.

It is of interest to note that Soysa and Jayawardena (1945), in connexion with the radiological findings in their cases of asthma associated with mites in the sputum, describe "a remarkable mottled effect produced by small, discrete, ill-defined spots disseminated throughout both lung fields." It would seem likely that these shadows resulted from lesions similar to those described in the monkey.

Pending the opportunity for post-mortem investigation of human cases, the experimental production of pulmonary acariasis in monkeys might be expected to throw further light on the problem.

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FULMINATING GAS GANGRENE

A FATAL CASE WITH UNUSUAL ACCOMPANYING FEATURES

BY

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AND

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Major, R.A.M.C.

During the war the risk of gas gangrene has been minimized by prompt and careful surgery and by the routine employment of serum and bacteriostatics. Nevertheless sporadic cases are still encountered, and occasionally, as in the following instance, the infection progresses so rapidly that treatment is of little avail.

Clinical History

On Sept. 9, 1944, during an aerial bombardment in North Italy, Cpl. B., aged 24, sustained a large penetrating wound of the upper and outer aspect of his right thigh. The injury was complicated by a fracture of the right femur involving the great trochanter and the neck of this bone. Eight hours later, at a field surgical unit, Major Birt carried out a thorough wound toilet, introduced calcium penicillin locally, and applied a Tobruk plaster. Sulphanilamide was administered by mouth to a total dosage of 14 g. The patient was transported by air to a base hospital, arriving at 3 p.m. on Sept. 11.

When we examined him shortly after his arrival he was obviously very ill, and intense toxaemia was evidenced by a pulse rate of 140 a minute and a subnormal temperature. In addition there were transient delirium, mild jaundice, and coldness and pallor of the right foot. The Tobruk plaster had been admirably applied and split before admission, and since further loosening failed to restore circulation, it was clear that the femoral artery had been damaged or obstructed. Transfusion of plasma, followed by two pints of whole blood, did not bring appreciable improvement, and as the systolic blood pressure remained in the neighbourhood of 90 mm. Hg we decided against operative intervention. The appearance of the wound and crepitation in its vicinity indicated that gas gangrene had arisen, and penicillin was therefore administered intramuscularly (200,000 units in 36 hours).

On Sept. 12 the patient's general condition was distinctly worse (temperature 101° F., pulse rate 150). He had become much more deeply jaundiced than is usual in toxaemia, and the picture was further confused by the discovery of malaria parasites (B.T.) in the blood films. During a subsequent lucid period he was able to inform us that he had suffered from malaria on five previous occasions.

Later in the day gas could be felt crepitating in the tissues of the abdominal wall and the right foot became frankly gangrenous. That night the patient sank into coma, and death occurred at 11 a.m. on Sept. 13—44 hours after admission to hospital.

Main Post-mortem Findings

During the necropsy gas was readily expelled from the tissues in the neighbourhood of the wound, and the whole of the anterior abdominal wall crepitated on pressure. Later the subcutaneous tissues were seen to be heavily bile-stained and there were areas of gas formation throughout the abdominal musculature.

Gangrene of the right leg was found to have resulted from a large ante-mortem clot which blocked the most proximal two inches of the femoral artery. There was no evidence of vascular trauma. Via the femoral canal, gas had passed upwards, distending the whole length of the psoas sheath. It was also present in large quantities in the loose tissues around the ascending colon. The cystic duct was so acutely kinked by gaseous inflation of the neighbouring tissues that the tense gall-bladder could not be emptied. Owing to the manipulation entailed, it was not possible to estimate the degree of compression exerted on the common bile duct. The liver was pale, and fatty degeneration had obviously occurred. There was moderate enlargement of the spleen, and its pulp was firm, with prominent trabeculae.

The only pulmonary pathology was a terminal basal pneumonia, but the thorax had been invaded by gas bubbles via the right side of the diaphragm and the right pectoral muscles were heavily infected. The left ventricle of the heart was collapsed and the myocardium was pale and friable.

It was not possible to culture specific organisms from the wound, but sections of liver provided interesting information. Well-marked dilatation of the hepatic ducts and generalized granular degeneration of liver cells were observed. Frequent areas of focal necrosis contained nests of rod-shaped bacilli which were presumably *Cl. welchii*. Sections of the kidney proved surprisingly normal; toxic changes were obvious, but no areas of focal necrosis could be detected.

Summary

In spite of careful and comparatively early treatment of a large wound, followed by the introduction of calcium penicillin, gas gangrene arose and caused death within four days.

Points of particular interest were: (1) The coexistence of toxic and obstructive jaundice. (We have never before observed displacement and kinking of the bile ducts by an accumulation of gas.) (2) The concentration of the infective process in the liver with comparatively slight renal damage. (3) The coexistence of anaerobic gangrene and gangrene resulting from vascular occlusion. (4) The fact that the patient's resistance was almost certainly lessened by frequent attacks of malaria.

We are grateful to our commanding officer, Col. R. A. Stark, for permission to report this case.

Medical Memoranda

Carotinaemia in the Tropics

The first record of carotinaemia in the Tropics was that of Sequeira (1936), who diagnosed the condition in two Europeans resident in East Africa. They had a marked yellow discoloration of the skin of the palms, the palmar aspects of the fingers, and the soles and heels. The clinical diagnosis was corroborated by the pathological findings. A careful investigation of their diets failed to reveal any cause for the condition. In the same paper there was reported the occurrence, in a male adult of the Muganda tribe, of a similar yellowish discoloration of the skin of the palms and soles. The diet of this African was also investigated, and was found to be the normal native diet, consisting mainly of plantains. On clinical grounds it appeared to be a case of carotinaemia, but it was not possible to test the blood serum for carotene.

A further five cases, all in Europeans—two from Kenya, two from Nigeria, and one from India—were described by Manson-Bahr and Ransford (1938). In all five the carotene pigment was demonstrated in the serum. In none of them was there any definite evidence of excessive consumption of foods with a high carotene content. Four of the cases gave a history of intestinal infection, and all were distinctly below the normal standards of health. The authors state that they had never observed carotinaemia among perfectly normal individuals who had returned after prolonged tropical residence. This condition of physical impairment with carotinaemia is directly contrary to the experience, in England, of Almond and Logan (1942), who found no evidence of ill-health among their cases.

Case History

In 1943 a Grenadian planter aged 45, of African descent, medium brown complexion, was sent to me for an opinion as to the cause of his condition, provisionally diagnosed as atypical jaundice. He stated that for approximately 10 years he had suffered from a persistent yellow discoloration of the hands and feet; apart from that his health had been excellent. He was residing in a malaria-free district and had not had an attack of malaria for over 20 years.

The palms of the hands showed a marked orange-yellow tinge; this was less noticeable, though still plainly evident, on the palmar aspects of the fingers. A considerable degree of discoloration was present on the soles of his feet. The sclerotics were clear, the urine normal, and the blood pressure 120/80. On general examination nothing abnormal was noted beyond a faint suggestion of an orange tinge in the skin, particularly that of the face. This very slight alteration in colour, combined with the natural degree of pigmentation, gave him an appearance of good health far above the average. On being questioned with regard to his diet he said that he was particularly fond of papaw, of which he consumed from 3 to 5 lb. daily. Miller and Robbins (1937) estimated that papaw (*Carica papaya*) contained, on the average, 2,500 international units of vitamin A per 100 g. of edible material.

The three-layer test was applied in which equal quantities of serum, alcohol, and petroleum ether were shaken up in a test-tube and then left to settle. Lipochromes were found to be present in abnormal amount, since the top layer had a strong yellow tinge. Greene and Blackford (1926) stated that this positive result was pathognomonic of carotinaemia.

I am indebted to Dr. J. Whiteman, D.M.O., Grenada, for bringing this case to my notice.

E. COCHRANE, M.D., D.P.H.,
Senior Medical Officer, Grenada.

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Two Cases of Erysipeloid treated by Penicillin

The administration of sulphonamides is generally very effective in the treatment of erysipeloid. The response to treatment by penicillin would appear to be prompt and rapid.

Case Histories

Two Army cooks, aged 42 and 34 respectively, were cutting up a carcass of fresh veal; one already had a small non-infected abrasion of the left ring-finger, the other cut his left middle finger during the process. Inflammatory swelling of the affected fingers began around the sites of trauma on the following day, being accompanied by sensations of stiffness and aching. On the eighth day of the illness the clinical picture in each patient was almost identical. The whole of the affected fingers including the knuckle and a small area of the palm of the hand, together with the contiguous sides of the proximal phalanges of adjacent fingers, was the site of a slightly tender bluish-red erysipeloid. A firm margin to the swelling could be traced, and flexion of the affected fingers was minimal and painful to perform. The epitrochlear and axillary glands were not clinically enlarged, and there was no constitutional disturbance.

Sodium penicillin was given intramuscularly—15,000 units as the initial dose and 15,000 units 3-hourly until totals of 485,000 units and 560,000 units had been administered. In each case after 24 hours the swelling had markedly decreased, flexion of the finger was easier, and the aching sensation and tenderness had practically gone. On the third day penicillin therapy was stopped; the definite edge of the swelling could no longer be detected, and flexion of the finger was almost complete. By the fifth day there remained only a slight discoloration of the skin over the affected area, and a collar of desquamation of the epidermis around the small traumata which had been the original entry points of the infection.

I wish to thank Col. T. F. Arnott, O.B.E., T.D., R.A.M.C., for permission to publish these notes.

G. A. HODGSON, D.M.,
Major, R.A.M.C.

Sir Farquhar Buzzard visited Leeds on March 16 for a meeting of the Provincial Hospitals Regionalization Council of the Nuffield Trust, held at the General Infirmary at Leeds. The Council had previously had a number of consultations with representatives of the voluntary hospitals, meeting the Lord Mayor of Leeds, members of the City Council, and others concerned with the co-ordination of hospital services. A report was made to the Council in regard to the development of two joint bodies in furtherance of the co-ordination scheme with which the Trust is associated. The first of these is in Gloucestershire, Somerset, and Wiltshire; the second concerns the formation of a joint body for the Essex area; they will receive and consider reports of the surveys of hospital services in their areas. The Council was addressed by Mr. William Gissane, clinic director and surgeon-in-chief of the Birmingham Accident Hospital.

Reviews

SUPERVOLTAGE X-RAY THERAPY

Supervoltage X-ray Therapy. By Ralph Phillips, M.S., F.R.C.S., D.M.R.E. With the technical assistance of G. S. Innes, B.Sc., A.M.I.E.E. A report for the years 1937-1942 on the Mozelle Sassoon Supervoltage *X*-ray Therapy Department, St. Bartholomew's Hospital. (Pp. 141; illustrated. 16s.) Published for the Sir Halley Stewart Trust by H. K. Lewis and Co.

This report on the experience at St. Bartholomew's Hospital with the million-volt apparatus merits a high place in the world literature on radiotherapy. The vision and scientific enthusiasm displayed by the members of the Radium Committee of the hospital since 1919 culminated in this project, which was inaugurated in 1934 after members of this committee visited the Sheffield Radium Centre to see the new continuously evacuated 200 kV *x*-ray apparatus installed by Metropolitan-Vickers, and the result was what is probably the most efficient supervoltage *x*-ray apparatus in the world for medical work. Finzi, Donaldson, Canti, Levitt, and Hopwood are to be applauded for the decisions which made this possible.

The account of the building, the apparatus, and the protection equipment is lucid, and the account of such technical matters as the devices employed to raise the operating voltage from 700 kV to 1,000 kV shows great ingenuity. The physical measurements for protection, voltage, half-value layer, and depth dose provide unique data of great scientific value, while the technical modifications carried out from experience in the department to improve on the details of design betray a high desire for a safe, accurate, and efficient clinical instrument and ingenuity in achieving it. The great gain over 200 kV apparatus is in the dose which can be given at a depth, especially with small fields (100% gain at 15 cm. with a 24-square-centimetre field).

As is to be expected, the number of patients treated during the five years covered by the report, encroached on as the work was by numerous essential physical measurements, justifies no more than a preliminary account of the clinical side of the work; but in rectal carcinoma the results reported show such an improvement on those of ordinary 200 kV *x*-ray therapy that (whether due to the improved depth dosage of 1,000 kV or to the different wave-lengths of radiation employed) the instalment of a 1,000 kV apparatus in every large centre should be considered a necessity. Only a trial can show whether the use of 5 million volts suggested by the author will offer further clinical benefit. Developments in technique with the million-volt apparatus are still possible and necessary in his view.

The work of Mr. Ralph Phillips and of Mr. Innes, his physicist colleague, as set out in this profusely illustrated report cannot be praised too highly. They have built well on the basis afforded by the manufacturer's efficiency and the imagination of the committee.

TROPICAL MEDICINE

Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases. By Richard P. Strong, M.D., Sc.D. Vols. I and II. Seventh edition. (Pp. 1,827; illustrated. $21.00 or £5 5s.) Philadelphia: The Blakiston Company; London: H. K. Lewis & Co.

That the demand for this textbook has increased in recent times is evident from the fact that the new (seventh) edition, at the end of 1944, follows so soon after the previous one, which was published only in 1942; even better evidence of its popularity is that between these editions three reprintings were required. This access of interest in the diseases of tropical countries on the part of medical men in America is no doubt primarily attributable to the urgent need for providing for the medical conduct of campaigns in tropical regions. It is not improbable, however, that the demand for information about tropical diseases will persist and even increase in peacetime; certainly the need will remain.

The effort to keep a book of this kind abreast of the times involves an immense amount of reading and research, and the author has been particularly successful in presenting the advances made up to date: for example, the use of sulphaguanidine and similar drugs in bacillary dysentery, and the experimental work relating to the various applications of penicillin in tropical diseases. Some of the most striking recent work has been done on the aetiology of pinta or carate; pinta is now regarded as a spirochaetal disease due to *Treponema herrejoni*. This adds yet another complication to the syphilis-yaws series of problems in the Tropics.

In some directions progress in medical science during the latter part of the war has been so rapid that a few omissions and additions could be made with advantage; for information about certain advances quite recent journals will have to be consulted. This affects principally the sections on treatment and prevention: cases in point are the fresh conclusions as to the disadvantages and even dangers of intensive alkaline treatment of blackwater fever; the effects of improved discipline in the prevention and cure of malignant tertian malaria; and the new means applicable for the reduction of insect-borne disease in general, in regard to which a good deal of additional knowledge has been accumulated in recent months. These small and unavoidable drawbacks do not in any way affect the fundamental value of this standard textbook. The high level already established for it has been admirably maintained by Prof. Strong, who is again responsible for the new edition.

A SYMPOSIUM ON UROLOGY

Clinics. Volume III. June, 1944; No. 1. Edited by George Morris Piersol, M.D. (Pp. 249; illustrated; six volumes per year; commencing with June number. £4 10s. per six volumes.) London and Philadelphia: J. B. Lippincott.

Six volumes of this publication are to appear yearly, and the volume under notice contains a symposium on urology. It gives an excellent account of the work done on this subject in the various clinics of North America. Dr. L. Herman, for example, summarizes work done in Philadelphia on endocrine therapy in carcinoma of the prostate. He has come to the conclusion that, although there is no reason to believe that either castration or stilboestrol therapy increases the span of the patient's life, it undoubtedly relieves him of much pain and discomfort. Opinions would seem to differ as to the relative advantages of these two methods of dealing with prostatic carcinoma. Another subject considered in this volume is the preventive treatment of calcium urolithiasis. Renal calculi are very frequently formed by patients confined to bed for many months by some bony injury, and, as thousands of wounded soldiers at the present time are suffering this fate, any measures which counteract this disposition to form stones are of great importance. Dr. Herman considers such factors as calcium excretion, change in the *p*H of the urine, diet, infection, and immobility in bed in the formation of stones. He recommends the following: increased fluids, control of the diet with regard to vitamin A and calcium content, movement of the patient, vigorous treatment of infection, and continuation of these measures for at least three months after the patient has got up. He also advises that a skiagram should be taken as a routine before patients who have been long in bed with fractures are discharged from hospital.

Some of the papers published in this volume deal with rarities only. There is also a very good account of the management of syphilitic patients by Dr. F. Halz and Dr. L. P. Ereaux of Montreal. In spite of the fact that public clinics deal with great numbers of syphilitic patients, the future of the conquest of syphilis rests in the hands of medical practitioners. The object of this paper is to give practitioners and medical students an up-to-date summary of the diagnosis and treatment of this disease.

CARE OF THE FEET

Take Care of Your Feet. Decorations by Francis Barthropp. (Pp. 129. 5s.) London: Published for the Foot Health Educational Bureau by George Gill & Sons, Ltd.

In an effort to make the public more foot-conscious the Foot Health Educational Bureau has published a book for popular reading entitled *Take Care of Your Feet.* It is a peculiar paradox in the use of words that the aim is really to make the public less conscious of their feet—a very worthy motive, not, however, so easy of accomplishment. Perhaps the first book of this kind to appear was in the United States, when Dr. D. Morton, whose anatomical and morphological work on the foot is well known, produced *Oh, Doctor, My Feet,* a popular exposition of his views on the functioning of the feet.

We cannot honestly say that we consider the public will derive much guidance, even if they get entertainment, from

Take Care of Your Feet. As the preface correctly states, "the astonishing thing is how little care is needed, how much can be achieved by simple common sense." The trouble is that even now we know too little about the functioning and variations of the feet to be in a position to give authoritative advice except on the simplest matters, such as cleanliness and the need for freedom from foot distortion by ill-fitting footwear. But these matters are already common knowledge to the great majority of people. If anyone be inclined to doubt the truth of such an indictment of the present state of our knowledge let him read the very divergent views of the more eminent orthopaedic surgeons on the aetiology of almost any foot trouble, and he then must agree that there is little consensus of opinion to justify *ex cathedra* advice upon how to avoid foot troubles. Indeed the author of one widely read book on the foot (Lake) has advanced the view that some foot disabilities have their roots deep-seated in inherent evolutionary weaknesses in the architecture of the foot, and are only partially dependent upon the immediate environment. If there be any truth in this idea such disabilities cannot be entirely avoided by the mere application of any rules of hygiene.

But whatever criticisms may be made of the general aim of the book, the individual items and illustrations should prove both interesting and informative to the public, since they are easy to understand and the language is non-technical. Contributors to the symposium—for such it is—include orthopaedic surgeons and doctors, chiropodist, physiotherapist, shoe manufacturer and fitter, tanner—there is even a chapter on "How to Clean your Shoes"! The book will almost surely have a wide range of readers, and we hope that they will not feel any sense of frustration when they have finished it.

Notes on Books

History has proved that war, so destructive of much else, has a constructive influence on medicine. This is reflected in the new editions of well-known textbooks that are appearing. The fourth edition of Prof. CARL J. WIGGERS'S *Physiology in Health and Disease* (Henry Kimpton; 50s.) illustrates that fact. As he expresses it, the present emergency "has challenged physiologists to interpret not merely the experiments which Nature makes on man (disease), but also those which, through warfare, man inflicts on himself." And with that as his text he has largely rewritten his book to useful purpose.

An attractive pamphlet entitled *Life Blood*, the official account of the transfusion services, has been prepared by the Ministry of Information for the Ministry of Health and the Department of Health for Scotland. It is published by H.M. Stationery Office at 6d. and is meant for popular consumption, as may be judged from the section headings: (1) From blood-giver to battlefront. (2) What is blood? (3) Transfusion: a life-saving service. (4) Blood relations: the story of the blood group. (5) How blood is given. (6) The secret of plasma. (7) The gift works miracles. The illustrated cover and the group of photographs in the middle of the pamphlet are good examples of reproduction by gravure process.

Preparations and Appliances

A NEW COVERING FOR SKIN DRESSINGS

Dr. J. E. M. WIGLEY, F.R.C.P., writes:

For many years I have been far from satisfied with the usually accepted methods of covering areas of crusted, exuding, or even pustular inflamed skin when it is desired to keep some external application in contact with them, and I expect that many of my colleagues have had the same feeling. By these usually accepted methods I mean the placing, over the desired application, of a layer of gauze, linen, or possibly lint, and then trying to keep these in place with bandages. It is generally found that when the dressing is to be renewed in 12 or 24 hours, or even longer, the medicament has dried or largely disappeared, and the gauze or other material has stuck to quite a lot of the affected area. When this is removed, either by simple traction or by soaking, it is almost invariably found that a considerable amount of the inflamed area, and perhaps newly growing epithelium, is pulled away with it, and consequently that the healing process is at least temporarily delayed.

When about a year ago I saw a film which showed the various uses that the Bunyan-Stannard envelopes could be put to, in addition to their use for the irrigation treatment of burns, I specially noticed that the material of which these bags were made (i.e., Stannard silk) did not adhere to the surface of the skin, whether that surface were normal or inflamed and crusting and oozing. In answer to a question to the demonstrator of the film it was confidently asserted that this Stannard silk would not stick to such surfaces, and it occurred to me that it might be more than a useful covering for such dressings as are often employed in the treatment of various skin eruptions. The eruptions I had in mind were principally of an eczematous nature affecting large areas of limbs, as in varicose eczema; on very mobile parts of the body, such as eczema of the breasts; and the frequently troublesome condition known as pus-coccal dermatitis, or possibly dermatitis repens. I was able to obtain, through the helpful and enthusiastic co-operation of the manufacturers of the irrigation envelopes, specimens of this silk in different shapes and sizes. Included in these specimens were some loose-fitting gloves.

My first experience with this material was that, though it did not stick to any skin surface to which it was applied, it was very apt to prove too hot owing to its non-porous consistency, and hence either it required frequent changing or it increased the irritation so much that the patient could not tolerate its use. As a result of various conversations with the manufacturers I have found that this defect has been almost entirely overcome by perforating the silk moderately closely. This perforated silk has now been in use in the out-patient department of St. John's Hospital for Diseases of the Skin, 5, Lisle Street, Leicester Square, W., for about five or six months, and I have also used it in my wards at Ashridge Hospital. On the whole I have found it very successful, though of course it needs to be used with a reasonable amount of common sense. We have found it better to try to fix the silk as lightly as possible with a bandage (avoiding any cotton-wool) rather than to use "elastoplast" or other adhesive strapping, as so many patients' skin eruptions are apt to be aggravated by these things. My usual method of using the silk is as follows:

Whatever application is desired, whether it be lotion, cream, paste, or ointment, is applied direct to the area to be treated and then the Stannard silk, cut to a suitable size, is placed over the ointment. In treating eczema of the breast I have found it eminently satisfactory to stitch the appropriately cut piece of Stannard silk to the inner surface of the brassiere. I know that it does not entirely prevent mobility of the breast, but the movement on the non-adherent surface of the Stannard silk does not seem to matter.

Stannard silk consists of a sheet of fine silk impregnated with a certain resin. It is claimed to be reasonably durable, and I have found that one piece of silk can be used, even by out-patients who do their own dressings, for about three weeks. For cleaning the silk it is only necessary to use warm water and soap, and I think on the whole it is undesirable to put it into the usual routine antiseptics. I say this, not so much that the antiseptics may destroy the silk, but that a small quantity of antiseptic may be left in contact with the silk and thus applied to the inflamed skin, which it may irritate and so make the underlying condition worse.

The manufacturers of this silk are Irrigation Envelopes Ltd. of 345, Gray's Inn Road, W.C.1, whom I have found more than willing to co-operate in any way they can. They are proposing to make a silk in rolls of two widths which could be conveniently hung on the wall and cut off in various lengths and sizes as necessity arises. The relative cost of the Stannard silk works out as very little different from that of the gauze, etc., which would require so much more frequent changing.

LONG-ACTING SOLUTIONS FOR INJECTION

Allen and Hanburys Ltd. announce the introduction of the "hyperduric" series of long-acting injectable solutions. In these preparations the usual acid radicals are replaced by mucate. It has been found that combination in this way with mucic acid has the effect of delaying and prolonging the absorption and the action of the base. The series consists at present of the following: Hyperduric M.H.A.—morphine, gr. 1/4, hyoscine, gr. 1/80, adrenaline, gr. 1/160, per c.cm., giving about 8 hours' amnesia and narcosis without fall of blood pressure, for pre-operative medication, "twilight sleep" in labour, and relief of traumatic pain and shock; hyperduric morphine—gr. 1/2 per c.cm., giving 8 to 12 hours' analgesia in inoperable malignant neoplasms, visceral lithiasis, wounds, and acute and chronic inflammatory disorders; and hyperduric adrenaline—1 in 1000, giving 8 to 10 hours' relief in bronchial asthma and other allergic disturbances, including anaphylactic (e.g., serum) shock, besides surgical shock.

NETHERLAND CHILDREN IN ENGLAND

BY

J. TAUBER, M.D.Prague, U.N.R.R.A.

Four hundred and ninety-six Netherland children reached this country on Feb. 11, 1945, and were accommodated in a large hostel in Coventry formerly occupied by immigrant munition workers. Preparations for their reception had been made some time in advance. We had little previous knowledge of the condition of the children except that they had been living for a long time mainly on bread, potatoes, and cabbage, and that in this first contingent there were to be no severe or hospital cases.

There is little practical information in medical literature about the feeding of malnourished, weakened, but not really sick persons. It was known that persons who have had practically no fat in their diet for years become very sensitive to it, and that they are liable to react to fat with severe gastric disturbance. In "feeding up" a large group of children, with only a short time available for treatment, it is nevertheless essential to ensure that the fat content of the diet is not kept too low. It is necessary to find the optimum level of tolerance. "Carbohydrate poisoning" is a term that has been used to describe the effects of the type of diet these children had had. It was decided to limit the initial daily fat intake to 50 grammes per child and the initial daily carbohydrate intake to 400 grammes (to include 250 grammes of bread). The first menus, however, were prepared with an initial daily fat intake of about 28 grammes.

The children were mostly between 7 and 15 years of age: three were 16 years old. On arrival they presented a somewhat different picture from that expected. The main feature of the malnutrition was not so much wasting as the general undersize. Pallor was notable, and many children were rather weak. The apparent age of many children was well below the actual age. Gross symptoms of avitaminosis were not found. Some children had local thickening, cracks, or dryness of the skin. No trophic changes of the nails were observed and no diseases of the hair. Some 5% of the children had somewhat swollen gums. The dental state in general was not unsatisfactory.

The children's clothing was old, worn, and torn. Their shoes were in a worse state. Several of the children had dresses and suits made from Army blankets given them by soldiers of the liberating armies. Many had all-wooden clogs only. Their socks were very ragged. Within 24 hours the Women's Voluntary Service had started the distribution of complete outfits of new clothing (including handkerchiefs, towels, face-towels) supplied by the Red Cross. It was most pathetic to see the children's pleasure with their new belongings.

Despite the severe shortage of soap on the Continent, the children were very clean on arrival: care had been taken of this before they left the Continent, and the few cases of infestation with lice as well as cases of scabies were treated.

The amount of food was increased each week as tolerance was established. At first many children complained of hunger, which is not surprising. The initial diet had a daily calorie value of 1,800. This was increased on the third day to 1,900, on the fourth to 2,000, on the fifth to 2,200, and at the end of the first week was 2,400 calories. It was difficult to control the diet strictly because well-meaning visitors to the hostel gave sweets, biscuits, and cakes to the children unknown at the time to the authorities.

Acute gastric disturbance occurred in 17 cases during the first week, 27 in the second week, 24 in the third, and only 7 in the fourth. Most of the cases were easily controlled, although 4 cases developed jaundice. Sores on the feet and hands and impetigo were the commonest visible lesions. It was noticed that many cuts and wounds had turned septic. There were 5 cases of bronchitis and 6 of nocturnal enuresis.

The approximate average gain in weight of the children is shown in the accompanying Table.

While living in occupied Holland the children—the older ones at all events—had often been encouraged by the parents to defy German authority and to perform small acts of sabotage—such as, for example, the puncturing of tyres of enemy military vehicles. When transferred to the hostel in England the children suddenly found that law and order had to be observed, and at first they found the change somewhat bewildering. During the first week or so "sabotage" tendencies were noted in a few boys of the 13–15 years age group. All soon conformed happily to the necessary routine and rules of hostel life.

This first contingent of Netherland evacuee children on the whole presented few difficulties. The main problem was to determine and control the diet, and to graduate it according to growing tolerance. An interesting but lesser problem was the disciplining of the older children, who had for long cultivated disobedience to the German authorities in occupied Holland.

I would like to thank the M.O.H. of the City of Coventry (Dr. A. Massey) for his valuable help and advice in connexion with the medical work at the hostel, and Col. Daubenton for his kind permission to publish this report.

GIRLS

	7–8 yrs.	9 yrs.	10 yrs.	11 yrs.	12 yrs.	13 yrs.	14 yrs.	15–16 yrs.
	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.
During 1st week	0 15	3 15	3 1·8	1 13·1	2 0	1 12	1 3	2 10·7
2nd week	2 14·4	0 12·7	1 9·1	1 8·5	1 1·5	2 0	2 8	2 1·1
3rd week	0 6·7	1 10	1 2·6	1 8·4	1 8	0 14	2 3	1 14·2

BOYS

	7–8 yrs.	9 yrs.	10 yrs.	11 yrs.	12 yrs.	13 yrs.	14 yrs.	15–16 yrs.
		lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.
During 1st week	—	0 5·3	1 13	1 1·5	1 3	2 1·6	1 6·4	1 5
2nd week	—	2 0	1 6·4	1 14·5	2 5	1 11	2 3	0 6
3rd week	—	0 14	1 0	2 6·4	0 5	1 1·6	1 6·4	1 4

BRITISH AID FOR RUSSIAN HOSPITALS

Mrs. Churchill's Red Cross "Aid to Russia" Fund, which was started towards the end of 1941 and has now reached the impressive total of £6,700,000, is to have a permanent memorial in the shape of two hospitals at Rostov-on-Don, the port on the Sea of Azov in the Northern Caucasus. It was originally proposed to have one hospital of 1,000 beds, which, after the war, would be available for members of the Services and civilians alike, but on a suggestion from Moscow it was agreed to equip two hospitals, each of 500 beds. A committee, under the joint chairmanship of the Presidents of the Royal College of Physicians and the Royal College of Surgeons, and including hospital administrators, nurses, and representatives of the Ministry of Supply and the Ministry of Health, was set up for the purpose of advising on equipment. The equipment has been scheduled in 16 sections, ranging from the medical and surgical installations appropriate to hospitals of the size named down to motor transport for both hospitals, and the Ministry of Supply is now engaged in placing the orders. The total cost will be about £400,000, half of which has been contributed by the Scottish Branch of the British Red Cross Society. Mrs. Churchill is going to Russia on the invitation of the Soviet Government and the Soviet Red Cross and Red Crescent, and proposes to visit Moscow, Leningrad, Stalingrad, and Rostov, the rehabilitation hospitals in the Crimea, and the spa hospitals in the Caucasus. Mrs. Churchill's committee has also agreed to provide the machinery and equipment for a Russian "Roehampton" for artificial limbs; this is being built at Moscow, with a subsidiary centre at Kharkov.

At a press conference in London Mrs. Churchill explained the purpose of her visit, and Lord Moran and Sir Alfred Webb-Johnson spoke briefly, the former mentioning his own visit to Russia, in which he had been greatly impressed by the thoroughness of the hospital organization and equipment, and the latter saying what pains had been taken by the committee of experts to ensure that these two hospitals at Rostov, a permanent memorial of the gesture made by the British people towards the Russian people during their common sufferings, were equipped with the best that could be provided. The bulk of the equipment will be British, but the committee has not confined itself to British equipment if something better can be obtained elsewhere. Prof. Sarkisov, the representative in Britain of the Soviet Red Cross and Red Crescent, expressed his appreciation of what had been done. It was mentioned that up to date the Fund has sent, in 42 shipments, nearly 14,000 tons of drugs, hospital equipment, and comforts for the sick and wounded of the Soviet Armies.

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PRIMARY ATYPICAL PNEUMONIA

The literature of the past eight years has contained a growing number of reports of an acute epidemic respiratory disease characterized by an influenzal onset, rapid prostration, and clinical and radiological evidence of lesions in the lung; the disease resolves spontaneously in a few weeks and the mortality is low. It is probable that this condition has existed sporadically for many years,[1] but recently it has become increasingly common, first in America and later in this country. The early reports, such as that of Bowen[2] in 1935, came from America, and, as the evidence accumulated, certain facts about the disease emerged. The incidence is particularly high among young adults, and epidemics often occur in communities of young people; there have been outbreaks among university students and hospital staffs, and in Army camps. Weir and Horsfall[3] succeeded in recovering from patients suffering from primary atypical pneumonia a virus that caused pneumonia in the mongoose, while Adams[4] found cytoplasmic inclusion bodies in post-mortem specimens. The disease has been transmitted to human volunteers by inoculating them with a filtrate of sputum and throat washings collected from 6 cases of atypical pneumonia.[5] Three out of 12 men developed the disease. Other facts suggesting that a virus is the infecting agent are the long incubation period of two to three weeks, failure to find causal bacteria, and the peculiar pathological changes in the lungs, which resemble those seen in known virus pneumonias.

Primary atypical pneumonia was comparatively uncommon in Great Britain before 1940, though sporadic cases were seen, some of which Scadding[6] described in this *Journal* as "disseminated focal pneumonias." Virus pneumonia, primary virus pneumonitis, atypical pneumonia, acute influenzal pneumonitis, and acute interstitial pneumonitis are a few of the terms given to the condition. In spite of the efforts of certain workers, notably Burrell[7] and Scadding,[8] to evolve a rational classification of the pneumonias based upon facts, the indiscriminate and confusing use of names continues. Some of these—particularly the misleading synonym "pneumonitis"—have been employed by various authors to denote different conditions, and almost every new worker in this field has invented some name to suit his fancy. Pneumonia has a long-established claim to be the generic term for inflammations of the lung, and for the sake of clarity "pneumonitis" and its companion "pleuritis" should be discontinued. In 1942 a Commission on Pneumonia of the United States Army[9] tried to bring order out of chaos by decreeing that the new epidemic disease should be called "primary atypical pneumonia, aetiology unknown." The adoption of this rather clumsy title would undoubtedly help to prevent confusion in the future.

Primary atypical pneumonia is now a common disease on both sides of the Atlantic; in 1943 Drew, Samuel, and Ball[10] published a very full account of 50 cases among Service personnel in this country, and since then American authors have recorded even larger numbers. The clinical, radiological, and pathological aspects of the disease can now be described with accuracy. There is often a prodromal cold, followed in about a week by the sudden or gradual onset of prostration with high fever; a paroxysmal cough and substernal soreness are almost always present at this stage. The sputum is muco-purulent and rarely stained; it contains the usual bacterial flora but pneumococci are never numerous.[11] Varying degrees of dyspnoea and cyanosis may be present, and headache is often a feature. There may be no abnormal physical signs in the chest, and the leucocyte count is usually normal. The disease may last from 3 to 5 weeks and recovery is the rule. Some outbreaks have been more serious than others: in a series of 19 cases Brethauer and Thompson[12] recorded 5 deaths; pulmonary oedema, preceded by a fall in blood pressure, was a feature of these. Golden,[13] working in the United States Army Institute of Pathology, examined post-mortem material from no fewer than 90 fatal cases in 4 years. In the uncomplicated cases he found an ulcerative bronchitis and bronchiolitis with peribronchial interstitial pneumonia; a notable feature was the heavy monocytic infiltration of the affected areas. Patients with this condition are very prone to develop a secondary bacterial pneumonia, but exudation into the alveoli is rare in the uncomplicated cases except as a thin deposit which forms hyaline membranes on the alveolar walls. Acute interstitial pneumonia of this type has been reported during influenza epidemics by MacCallum[14] and by Scadding,[15] and it bears an interesting resemblance to the so-called rheumatic pneumonia (Epstein and Greenspan[16]). Bronchial dilatation occurs early in the disease, and although the destructive changes are rarely gross enough to prevent resolution to the normal state, examples of residual scarring, with bronchiectasis, have been recorded by Crysler[17]; there is, however, reason to believe that collapse may have been a complication in these cases.

The radiological appearances of primary atypical pneumonia are often striking and were largely responsible for

[1] Dingle, J. H., and Finland, M., *New Engl. J. Med.*, 1942, **227**, 378.
[2] *Amer. J. Roentgen.*, 1935, **34**, 168.
[3] *J. exp. Med.*, 1940, **72**, 595.
[4] *J. Amer. med. Ass.*, 1941, **116**, 925.
[5] Commission on Acute Respiratory Diseases, Fort Bragg, N.C., *J. Amer. med. Ass.*, 1945, **127**, 146.
[6] *British Medical Journal*, 1937, **2**, 956.
[7] *Lancet*, 1938, **1**, 662.
[8] *Quart. J. Med.*, 1939, n.s., **8**, 79.
[9] *War Med.*, 1942, **2**, 330.
[10] *Lancet*, 1943, **1**, 761.
[11] Smith, R. H., *Ann. intern. Med.*, 1944, **20**, 890.
[12] Ibid., 1944, **20**, 884.
[13] *Arch. Pathol.*, 1944, **38**, 187.
[14] *Monograph 10, Rockefeller Inst. Med. Research*, 1919, N w York.
[15] *Quart. J. Med.*, 1937, n.s., **6**, 425.
[16] *Arch. Intern. Med.*, 1941, **68**, 1074.
[17] *Amer. J. Roentgen.*, 1944, **51**, 280.

its recognition. Crysler[17] and Lewis and Lusk[18] have now described them in detail. The infection first attacks the bronchi, and an *x*-ray film in the early stages shows some enlargement of the hilar glands with heavy truncal markings in the affected area, which in most instances extends downwards from the hilum into the lower lobe. As the infection spreads into the interstitial tissues of the lung two types of shadow may be seen—a homogeneous, ground-glass opacity through which the lung markings are still visible; or a group of patchy flocculent opacities. These may vary in size from large blotches to an almost miliary mottling, as in the disseminated focal pneumonia of Scadding. The affected area usually occupies only part of a lobe and tends to follow the bronchial distribution; a lateral view is often useful in determining its situation. Bilateral lesions occur in about 20% of cases. As the pneumonia resolves, the opacities become less dense and take on a moth-eaten appearance. The large, homogeneous type of lesion may resemble that of tuberculosis, collapse, a lung abscess, encapsulated fluid, a neoplasm, or a bacterial pneumonia. The clinical picture, course of disease, and sputum examination will usually confirm the diagnosis, but Stein and Kresky[19] have shown that in pneumococcal pneumonia the radiographic appearance may be identical, so the diagnosis cannot be made from the *x*-ray appearance alone. Small wedge-shaped shadows, and even hazy diffuse mottlings, are often the sole radiographic changes in proved pneumococcal cases, and similar changes may be seen in the benign circumscribed pneumonia described by Ramsay and Scadding[8]: a transient opacity appears, usually in the lower lobe, during the course of a mild infection of the upper respiratory tract. Kennedy[20] lately recorded 100 cases of this disease, which may be distinguished from primary atypical pneumonia by the fact that it causes almost no constitutional disturbance, and the *x*-ray changes usually clear up in about 7 to 10 days. The flocculent shadows seen in primary atypical pneumonia may resemble an area of tuberculous infiltration, miliary tuberculosis, or a bacterial bronchopneumonia.

Primary atypical pneumonia is becoming more common. Although the disease is usually self-limiting and there is no specific remedy, symptomatic treatment should be carried out with circumspection, for the condition can become serious. The disease affects not only the entire respiratory tract but the whole body: oedema of the myocardium (Brethauer and Thompson[12]), infiltration and necrosis of the branches of the pulmonary artery (Kneeland and Smetana[21]), and encephalitis (Golden[13]) have all been recorded. The patient should therefore be kept in bed and every effort made to conserve his strength. A careful watch should be kept for signs of circulatory or respiratory distress, and oxygen should be given early if necessary. The sulphonamides are useless, except in those occasional cases in which a secondary bacterial pneumonia supervenes. As in influenza, weakness and depression, with a lowered resistance to infection, are features of the recovery period, and convalescence should be adequate.

18 *Radiology*, 1944, **42**, 425.
19 Ibid., p. 435.
20 *Lancet*, 1943, **1**, 769.
21 *Johns Hopk. Hosp. Bull.* 1940, **67**, 229.

DIAGNOSIS OF VITAMIN DEFICIENCY FROM LABORATORY TESTS

Of recent years many laboratory procedures for the measurement of vitamin levels in the blood and urine have been devised. What relation exists between the clinical picture of an early vitamin deficiency and such laboratory determinations? Much has been written on so-called subclinical vitamin deficiencies, particularly of vitamin C and the vitamin B complex, the diagnosis usually being made on a poor dietary history associated with indefinite symptoms such as weakness, nervousness, anorexia, irritability, and various gastro-intestinal complaints. It is often difficult to tell whether a patient has a true vitamin deficiency and may benefit from the intelligent use of a liberal diet supplemented with vitamins, or whether the patient suffers from mild ill-health or is neurotic. A correct diagnosis is obviously of importance to prevent expensive vitamin preparations being recklessly dispensed and wasted. It is estimated that the American public spends 20 million dollars a year on vitamins, for the most part unnecessarily. Vitamin deficiency is generally due to malnutrition, which is usually due to poverty. Those who cannot afford to eat enough certainly cannot afford vitamins out of a bottle.

Ruffin, Cayer, and Perlzweig[1] have done clinicians a service by correlating laboratory studies on the estimation of vitamins in blood and urine with the symptoms of mild clinical deficiency. They assessed the "vitamin status," as shown by laboratory tests, of patients with the clinical symptoms of mild vitamin deficiency, and compared the results with those obtained with controls chosen from hospital patients and from students, technicians, and dietitians. The latter group presumably represented the better-fed members of society. The difficulty arises when the results of such estimations are interpreted and normal values are laid down. What is the lower limit of normal? Ruffin and his co-workers arbitrarily took this as the upper limit found in the lowest 10% of the normal control group for each vitamin. This, of course, has no clinical significance and is only a base-line from which to work. The patients from the vitamin-deficient group showed statistically lower levels of vitamin A in the plasma than the normal and hospital controls, though no clinical evidence of frank vitamin-A deficiency was seen. There was a wide discrepancy in the vitamin-C levels of the plasma between the suggested lower limit of normal (0.15 mg. per 100 c.cm.) and the generally accepted figure of 0.6 mg. per 100 c.cm. This confirms the more recent view that plasma-vitamin-C studies are valueless for detecting vitamin-C deficiency. Nearly 50% of the normal controls had a plasma vitamin C below 0.6 mg. per 100 c.cm. which is generally thought to be the lower limit of normal. Actually the difference between the plasma vitamin C of the vitamin-deficient and the normal control groups was not statistically significant. The urinary excretion of nicotinic acid after a test dose of 500 mg. of nicotinamide averaged 48 mg. in the vitamin-deficient group and 88 mg. in the controls; most of the deficient group had values below the suggested lower limit of Ruffin and his co-

1 *Gastroenterol.*, 1944, **3**, 340.

leagues (65 mg.). The urinary excretion values of riboflavin after a test dose of 5 mg. were statistically lower in the deficiency group than in the controls. Similar results were obtained with the excretion of vitamin B_1 four hours after a test dose of 1 mg. The levels for vitamin B_6 showed no significant variation between the normal controls and the vitamin-deficiency group: there is some doubt about the significance of vitamin B_6 in human nutrition. It is of interest to note that most patients in the deficiency group had levels below the suggested lower limit of normal in more than one vitamin. Thus 24 of 26 patients had levels below the suggested lower limit of normal in nicotinic acid, riboflavin, and vitamin B_1. This is in keeping with the clinical opinion that vitamin deficiencies rarely occur singly.

The observations of Ruffin and his colleagues suggest that, with the exception of vitamin C, there is a relation between the clinical picture of a mild or early vitamin deficiency and the results obtained from laboratory determinations of vitamin levels in the blood or urine. Now that the estimation of vitamins in body fluids is a practical procedure, this should become an important aid in confirming the presence of mild or early deficiencies, and save much of the money spent on useless vitamin therapy.

A TEST FOR TRICHINOSIS

The exact diagnosis of trichinosis in man is often a tedious and uncertain business, involving a muscular biopsy with the inevitable chances of a random sample failing to show parasites. There have therefore been, from time to time, attempts to evolve skin or serological tests which would simplify the diagnosis and make this more certain. The human disease usually resulting from the consumption of raw or ill-cooked infected pork, such tests might also be applied to the detection of the infection in pigs, and if satisfactory they would add a useful weapon for the control of infestation in these animals. The importance of having at hand such diagnostic measures varies with the incidence of the infection. This is not a common one in this country, though there have been a number of recent outbreaks, and it is likely that cases are not infrequently overlooked. It is, however, a widespread disease in the United States, though the exact incidence is uncertain, since the symptomatology varies with the degree of infestation, and, as a result, many cases of the disease, especially of milder infections, are undiagnosed; in fact, many of the victims may be almost symptom-free.[1] Wright and his co-workers[2] in 1943, by the post-mortem examination of diaphragmatic muscle, found 855 infected individuals out of 5,313 necropsies; 733 of these showed fewer than 11 larvae per gramme of muscle, while 38 showed more than 50. On the basis of these and similar figures Hall and Collins consider that there are several millions of persons in the United States who are infected.

Of the immunological tests, complement-fixation and precipitation tests have been widely employed since Ströbel[3] introduced the first in 1911. The results, however, though satisfactory in some hands, have been irregular, with false positives and failures of the test in undoubted cases of infestation. The reaction takes some time to become positive, and after reaching a peak its intensity diminishes as time passes. One of the chief technical difficulties in devising a satisfactory immunological test is the preparation of a suitable trichinal antigen. This is usually made from larvae which are obtained by the digestion of muscle from infested animals. Suessenguth and Kline[1] have now introduced a new flocculation test for this disease, similar in many respects to the latter's better-known microscopical slide-precipitation test for syphilis. The antigen is prepared from the trichinous muscles of artificially infested rats, which are submitted to peptic digestion to free the larvae; these are then collected, washed, dried, and subjected to extraction with alkali. The extract is cholesterolized, as is the Wassermann antigen, and under suitable conditions gives a specific flocculation with the inactivated serum of patient or animals suffering from trichinosis. The authors report their results in some 896 cases and think them satisfactory: only 13 of these were examples of trichinosis when clinical, histological, and immunological data were all considered, so that there is need for a more extended series of results before the value of a positive test can be properly assessed. Syphilitic sera gave uniformly negative results. A number of observations made on experimentally infected swine, together with a few on human beings in which it was possible to follow out the course of the infection, indicated that the test becomes positive about 3 weeks after infestation (this is about the stage at which the larvae in the muscles reach their full development) and that the peak of antibody production occurs between the 23rd and 55th days; a positive result was still obtainable 10 months after infestation.

It is evident that this test is essentially one for use in laboratories where a regular supply of material is likely to be available. The technical details are exact, though not complicated, but the results of an occasional test in inexperienced hands are not likely to be of much value.

[1] *Amer. J. clin. Path.*, 1944, **14**, 471.
[2] *Publ. Hlth. Rep. Wash.*, 1943, **58**, 1293.
[3] *Münch. med. Wschr.*, 1911, **58**, 672.

ANTIMALARIA MEASURES IN INDIA

In a notice in this *Journal* of the annual report of the Ross Institute of Tropical Hygiene, India Branch, for the year 1942–3 mention was made of a summary by Dr. G. C. Ramsay of antimalaria measures that had been found effective in North-Eastern India. In the report for 1943–4[1] this summary has been brought up to date in the hope that it will serve the useful purpose of its predecessor in describing and illustrating the progressive antimalaria measures which the Ross Institute is able from experience to commend for adoption by subscribing interests, by the armed Forces, and by others concerned in the control of malaria in this region. Among such results of special experience stressed in the present report is the danger of surface drainage as an antimalaria measure where the vector species are *A. minimus* and *A. fluviatilis*. These species favour above all for their breeding places small sluggish streams or watercourses. An open drain may thus create an even more dangerous breeding-ground than the original swamp, which may have been relatively harmless because of covering vegetation. Again, drains effective when first made are apt to become dangerous by growth of grassy edges or other changes which occur in the course of time. Hence, as the report emphasizes, in the areas where *A. minimus* and *A. fluviatilis* are the chief carriers surface drainage should be so far as possible minimized, and where drains are necessary they must be constantly controlled by weeding, canalization, oiling, shading, flushing, herbage packing, or lining with cement. The

[1] Office of the Committee of Control, Royal Exchange, Clive Street, Calcutta.

use of shade over drains continues to be one of the most important measures, and attention is drawn to the "beehive" or "pent-house" pruning now being adopted in some districts. This gives the maximum amount of foliage, thereby further reducing the possibility of grass or weeds becoming established in the channels. An interesting photograph illustrates this method. Flushing by automatic siphon continues to grow in importance as a method of control, and some estates in South India formerly hyperendemic are stated to be now practically free from malaria owing to flushing measures. Some remarks are made in regard to misconception as to the practical limits of this method, which are by no means confined to small installations. Photographs are reproduced of a large pipeless automatic siphon in action. The serious danger from irrigation, hydro-electric schemes, construction of railways and roads, and other sources of man-made malaria arising from engineering works is stressed and the suggestion made that engineers should receive training in antimalaria work. Though the report is commendably modest in size it is a most useful and helpful publication, and should be closely studied by all who are engaged in antimalaria work in these regions.

THE SMOKE ENEMY

At a joint conference in London of the Institute of Fuel and the National Smoke Abatement Society many technical aspects of the smoke nuisance have been discussed. The domestic hearth is well known to be the chief source of this evil, because in the open grate no attempt is made to control combustion, and although an excessive amount of air usually passes up the chimney the gases are too cold for the volatile matter to burn once it escapes from the fuel bed. Factory chimneys make a large contribution to the smoke-laden atmosphere, but in industrial fires there is generally a much better control over combustion, so that the smoke, for the same amount of bituminous coal burned, is less than with the domestic fire. Dr. G. M. G. Dobson, of the Department of Scientific and Industrial Research, told the conference that the annual deposition of soot in country districts is in places less than 10 tons to the square mile, whereas in industrial towns it may be 100 or 200 tons to the square mile, and in known districts there may be as much as 2,000 tons to the square mile in the year. The concentration of smoke and sulphur deposit in British towns is more or less proportional to the square root of the population. The provision of smokeless zones in itself is not an effective safeguard. Hyde Park is more or less a smokeless zone, but on days when the air of London is foggy there is nearly as much smoke in Hyde Park as anywhere else.

Major S. F. Markham, M.P., pointed out that the smokiest areas in cities show an infant death rate double that of sunny small towns, and the general death rate also is highest where the gloom is deepest. Even allowing for other important factors such as bad housing and overcrowding, the amount of respiratory diseases in polluted areas is extremely significant. Among the remedies or palliatives put forward by various speakers were statutory joint boards to approve small industrial fuel plants, a better education of stokers, and, of course, for domestic fires, the replacement of coal by smokeless fuel. A special point was made of railway smoke, which always seems particularly objectionable, but a representative of the L.M.S. claimed that this was an exaggerated complaint. Railway locomotives use only about one-thirteenth of the total coal consumed in this country, and they burn it with an efficiency of 70 or 80%, compared with an average for coal-burning in general of 25 to 30%. Nevertheless, it is good to learn that the railways are not complacent about the amount of smoke that comes from their funnels, and locomotive engineers are striving for still greater efficiency. Proposals for the setting up of smokeless zones are described in some detail in a new booklet published by the National Smoke Abatement Society. Copies of *Smokeless Zones* may be obtained from the Society at Chandos House, Buckingham Gate, London, S.W.1, at 3d. each, post free.

CONGENITAL CHICKEN-POX

Infantile immunity to chicken-pox usually suffices to prevent an attack or it is negligible. Thus the disease is uncommon in the first year of life, but when it does occur may be accompanied by a profuse eruption, with marked constitutional disturbance. Intra-uterine transmission of the virus is rare. Only 9 cases have so far been recorded. They ran a fairly mild clinical course, with one exception, in which death occurred on the eleventh day of life. Oppenheimer[1] now adds a tenth case to this series by describing a congenital and fatal attack of chicken-pox in a coloured infant. The mother developed mild chicken-pox when seven months pregnant. A 4-lb. female infant was prematurely born five days after the appearance of the mother's rash. On the seventh day of life the infant developed a papulo-vesicular eruption which later became profuse, and on the eleventh day died with symptoms of respiratory distress. Any doubt about the true nature of the eruption was removed by the simultaneous development of chicken-pox in two hospital contacts fourteen days later. At necropsy, in addition to lesions on the skin, conjunctiva, and vagina, which had been noted during life, unusually widespread visceral lesions were found. These consisted essentially of zones of necrosis with typical intranuclear inclusion bodies in the oesophagus, stomach, intestines, lungs, liver, pancreas, adrenals, kidneys, thymus, and spleen. Focal necrosis alone was present also in the bone marrow of vertebrae and ribs. Examination of numerous brain sections revealed no abnormality. A detailed histological investigation showed there was a striking affinity of the virus for epithelial structures in the affected organs. Dermatropism in the chicken-pox virus is, of course, quite usual, but it is surprising that such an aggressive strain should have spared the nervous system. In contrast one of the very rare fatalities from chicken-pox in adult life[2] was characterized post mortem by disseminated lesions which included a diffuse encephalitis with areas of perivascular demyelination.

The Board of Trustees of the American Medical Association has cancelled the annual session for 1945, which was to have been held in Philadelphia from June 18 to 22.

In view of the continuing shortage of paper we must again ask authors to concentrate any articles they submit for publication and to cut out all verbiage. Every article longer than a memorandum should end with a brief summary.

Prof. F. Wood Jones, F.R.S., will deliver the Robert Jones Memorial Lecture entitled "Some Reflections on his Teaching of Myology" at the Royal College of Surgeons of England, Lincoln's Inn Fields, on Thursday, April 12, at 4 o'clock. Surg. Rear-Adml. G. Gordon-Taylor will deliver the Thomas Vicary Lecture entitled "The Medical and Surgical Aspects of the '45 (the Jacobite Rising of 1945)" at the College on Monday, April 16, at 4 o'clock.

[1] *Johns Hopk. Hosp. Bull.*, 1944, **74**, 240.
[2] Waring, J. J., Neubuerger, K., and Geever, E. F., *Arch. intern. Med.*, 1942, **69**, 384.

THE EDUCATION OF MILITARY MEDICINE

ITS REFERENCE TO POST-WAR PLANNING

BY

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I have not felt justified so far in putting any record of my military experiences into print, for it has seemed to me that the gain was largely a personal one, communicable to others by advice at the bedside, but not original enough to warrant the writing of an article. It is true that one has become expert in the diagnosis and treatment of diseases which a few years ago one had never encountered, but that does not imply superior knowledge over those who have already written for many years on the subject of tropical medicine. At the present time, however, I feel that there are two reasons which justify a departure from my reticence; the first is that the experiences have now grown wide enough to be of some historical interest; the second is that in view of present-day discussions on post-war plans I feel the urge to present to those at home an outline of the life and work of a physician in the Army. I shall describe mainly my own experience, not because it has been unique or outstanding, but because it will serve as an example of the kind of work which most of us have been called upon to do.

My first posting was as officer in charge of the medical division of a military hospital in England. Here the work was at times dull and rather trivial, but nevertheless one went through what might be called a period of professional rejuvenation. One lived in a mess among colleagues from all medical schools. This led to an exchange of ideas which was most valuable. We held weekly clinical meetings in which the dermatologist and pathologist took part, and once a fortnight the Command neurologist came to spend a whole day reviewing every neurological case we had collected in the meantime. One worked, for the first time, in close touch with psychiatrists, and though serious disease and death were uncommon, one learnt much of disorders in their early stages. In exchange for the problem of advanced heart failure one had the more difficult problem of whether heart disease was present at all.

Such an experience is valuable for a matter of months but not indefinitely, and naturally our aim was to go abroad. My own hospital sailed for an unknown destination, which we rightly guessed to be North Africa, in Feb., 1943. We landed at Algiers, where unfortunately we were held up for a few weeks, but during that time I visited two hospitals already established, in both of which I found medical friends. I saw typhus for the first time, in the civil hospital, where Prof. Benhamou demonstrated rickettsia in the sternal marrow. We moved to Bône, where we set up a tented hospital for a few weeks; but the battle was moving on, and we followed it closely, opening up again at Medjes-el-Bab and then near Tunis. This brief period towards the end of the Tunisian Campaign was the only one in which my surgical colleagues were busier than I. Usually the medical division claimed two-thirds to three-quarters of the beds.

Mepacrine Intolerance

In April, 1943, the First Army began to take suppressive mepacrine (atebrin) in doses of 0.2 g. twice weekly, with almost disastrous results. Some complained of diarrhoea, vomiting, or abdominal discomfort after the first few doses; but after the fourth dose there was a widespread epidemic of diarrhoea and vomiting, choleraic in its severity, which in the worst cases was accompanied by pyrexia and prostration for 48 hours. It affected all units, to a varying extent, and though I am not in possession of all the official facts I know that it was not restricted to any one brand of mepacrine and that those who had the symptoms once had them again on returning even to a small dose of the drug, although they had taken the initial doses with impunity. Psychological factors were considered but ruled out. Later it was found that the affected individuals could be desensitized by the administration of small gradually increasing doses. The occurrence has never been repeated, so far as I know, in any other theatre of war, and the only conclusion was that the scheme of dosage with its intervals was an unfortunate choice and had led to sensitization.

Dysentery in Tunis

Just at the end of the campaign Flexner dysentery began to occur, at first sporadically, but later—fortunately just after the Cape Bon victory—as a major epidemic. All this time we were working as a forward hospital under improvised conditions, with no *x* rays, no sisters, and often only the most elementary laboratory facilities. Cases of dysentery kept pouring in, and more than half our staff succumbed. Although often acutely ill on admission, the cases on the whole were mild and soon recovered. There were no deaths.

We had continually to evacuate our patients, as soon as they were fit to travel, to hospitals further back, for beds were scarce and patients many. To admit 250 patients in a day, discharge or evacuate an equal number, and be working in primitive conditions in intense heat, pestered by flies, at the height of a Flexner epidemic adds to life's experiences. I tried an equivalent series of cases on sulphaguanidine, on fluids only plus a placebo, and on the traditional saline therapy (magnesium or sodium sulphate). There was no question that the sulphaguanidine cases did best; of the others in my series, "fluids only" achieved slightly better results than salines.

Malaria

In mid-June I was posted to a hospital in Philippeville which had sisters, *x*-ray department, laboratory, and every other facility. It was partly hutted and partly tented. For a fortnight we were relatively slack, but suddenly, on June 29, malaria appeared. Within a week or two I realized that I had probably seen more malaria than I had seen of, say, an ordinary condition such as auricular fibrillation, in my life—such is the suddenness of experience in tropical medicine. Nearly 50% of the cases were M.T., often in its worst form—a disease which can kill within hours. There will never be any agreement on the treatment of malaria, for it varies so much in severity from time to time and from place to place. I am convinced that most doctors in India, though long resident there, have not seen M.T. malaria as I have known it, in epidemic form among troops spending their first summer abroad. Fortunately our death rate was very small, though we lost one or two in our early days when the full significance and the symptomatology were not recognized. There was one man, for instance, who because of his symptoms was admitted to a dysentery ward. I did not see him until the next day, when he was breathless, pulseless, and collapsed. Rapid respirations are not sufficiently stressed as a common symptom of severe M.T.—a tachypnoea rather than a dyspnoea, more like an acidosis than pneumonia.

Our good results I ascribe unhesitatingly to the *extravagant* use of intravenous quinine; and to the usual indications for its administration we added one more—viz., "because it is night-time."

It was no exception to admit over 100 fresh cases every day, the majority arriving in the evening. Those who have worked in a tented hospital, where at night one sister supervises three or four wards, where neither sisters nor nursing orderlies have much knowledge of malaria, where the lighting is by hurricane lamps and all patients are under mosquito nets, will realize how easily a man might pass unnoticed into coma, and will understand why we preferred to give intravenous quinine at night to every patient who was really ill. Our dosage was 10 gr., repeated four-hourly if necessary, our vehicle 20 c.cm. of saline given slowly from a syringe. In over 500 intravenous injections we had only one death which could have been ascribed to treatment. That was in a German nursing orderly (in the P.O.W. compound) who was extremely nervous and apprehensive and died 10 minutes after the injection. One was reminded of the occasional deaths from pleural shock rather than of a drug idiosyncrasy. We never gave the dangerous intravenous doses of adrenaline still recommended in Manson-Bahr's *Tropical Diseases*.

We worked by day and by night in tropical heat, and if any member of my team reads this record I would like him to accept this expression of my gratitude for his devotion; for I have had officers of varying professional ability, but have yet to meet one

who has been lazy or neglectful of his patients, despite the complete absence of any motive of gain, fee, or glory.

Other observations I might make on malaria are that whereas many of the M.T. cases relapsed early and were troublesome until Christmas, all the late relapses in the following spring and early summer were B.T. We saw M.T. in all its forms—the cerebral, the algid, and the dysenteric; as a cause of anaemia, of nephritis, even of ascites. Blackwater fever was not encountered.

Smallpox and Diphtheria

All the time we had, of course, our infectious wards and our skin wards, and we learnt, among other things, the differential diagnosis of early smallpox. Later in the year we had diphtheria, both cutaneous from so-called desert sores and faucial. At one time we had 140 diphtheria cases in hospital. Peripheral neuritis was common. Infective hepatitis was our biggest disabling disease in the autumn and winter, but I have no new observations to make upon it. Other infections we had in smaller numbers—chickenpox, mumps, typhoid, and glandular fever. We did Paul–Bunnell tests whenever our pathologist could catch a sheep. Typhus was almost unknown among the troops.

Italy

In Jan., 1944, we had a month's rest while waiting to cross over to Europe, and during that month I found time to read more medicine than I had read for many years. Although we may be divorced from the larger library facilities where exasperating references can be patiently sought out, there is always plenty to read in a general hospital. The Army provides a number of textbooks and a fund for buying more, and almost every officer has brought a few of his own, so that by lending or pooling there is no shortage of monographs and reference books.

We reached Naples in February, towards the end of the typhus epidemic which had broken out in the civil population. The weather was bitterly cold and there was no fuel or transport. Air-raid damage was considerable, and it was no wonder that lice and typhus spread among the half-starved half-frozen population, huddled together as they were in conditions of squalor I have seen in no other European town. Adults and children would steal and eat the food from our swillbins. The epidemic has made history, for it ceased abruptly when the populace was deloused on a grand scale by D.D.T. Dusting centres were set up in all parts of the town, propaganda was used to bring the people to them, and hundreds of thousands of persons were disinfested. Venereal disease was the greatest scourge of Naples, and the town was banned to all troops not actually stationed within its boundaries.

For a time we were employed as the evacuation hospital for Italy, and we saw every interesting long-term case on its way home—heart disease, neurological cases, nephritis, hypertension, lung abscess, occasional neoplasms, and anaemias. Our clinical meetings were as well off for material as those of most teaching hospitals, and were attended by many of the M.O.s in the district, including some from the Navy. We saw kala-azar for the first time, often in troops who had come direct to Italy from the U.K. Amoebic dysentery became a major problem, B.T. malaria was still with us, and a sharp epidemic of sandfly fever broke out.

From Naples I went to Rome, where much the same diseases occurred, with rather more typhoid fever than I had seen before.

India

From Rome to India, where a somewhat new outlook is required, although the main diseases are the same. One meets a case of foot-drop, for instance, and thinks not of lead poisoning but of leprosy. A severe pneumonia or adenitis arouses suspicions of plague. In West African troops we see trypanosomiasis, schistosomiasis, and yaws. The ancylostoma is ubiquitous, and nutritional anaemias and deficiency states are abundant. Sprue adds an enigmatic interest. Relapses of B.T. malaria, mild but repeated, cause our biggest loss of man-power, and amoebic dysentery is widespread.

Non-tropical Diseases

Of the non-tropical diseases we always have a plentiful supply. Chests of all kinds we see frequently, gastrics, psychoneurotics, anaemias, early heart cases. Pulmonary tuberculosis we meet far more often than we do at home, where all such cases are segregated in sanatoria.

Here, in the Southern Army, we have a first-class neurological centre where every variety of disorder can be demonstrated. In conjunction are the neurosurgical centre and peripheral-nerve-injury department, and there is an expert neuropathologist. We have hospitals set aside for tuberculosis, where collapse therapy of all kinds is carried out on suitable cases. We have research teams in dysentery, anaemia, malaria, and other subjects. Tropical eosinophilia and arsenical encephalopathy are interesting us; poliomyelitis is all too common. Opportunities for teaching are of everyday occurrence. Clinical meetings are held regularly in all big hospitals; the M.R.C.P. examination has been held in India and the Middle East. In my present post I have an ideal opportunity of meeting and discussing medicine with physicians representing every medical school in Britain and in India. I never leave their hospitals without having learnt something from them.

General Education

I have written enough now to achieve my object, which is to show that the physician abroad will come home rich in experience. He may be a trifle rusty on globin-insulin and thiouracil, or the management of the enlarged prostate, but these subjects he will relearn as quickly as he has applied himself to the problems of military medicine. Meanwhile his general education has not been neglected. If he has the aptitude he may now read or speak with some competence in four or five languages; he may have studied history in Constantine, Carthage, Baghdad, and Delhi; or architecture in Rome, Pompeii, and Agra. He may have listened to Italian opera and seen the Sistine Chapel. At a time when we are out to encourage better general education in our profession such experiences cannot be dismissed as irrelevant. Hospital planning and administration too have come his way, and, above all, the study of human nature in its many aspects, among different races and conditions, in heat and strain and danger. Personality has developed with the command of men. I speak not only for the physicians whom I know at first hand but also for others who have had like experiences and will return the better for them.

After the War

I admit to a touch of propaganda in my discourse. It is not for the benefit of the older ones like myself, established in their jobs at home, but because at this period of the war I hear frequent questions as to what will happen afterwards: "Will the jobs be filled before I get home?"; "Will partial demobilization mean that the late-comers get no chance, that posts are occupied before Japan is beaten?"

I feel that those at home are losing patience. I know that they have every excuse. They have worked hard and long, waiting for our return. They also are getting older. But we out here are *not allowed* to be impatient. We have to take what comes and go where we are sent, for as long as we are required, without question, without choice.

Many of the physicians in the Army have jobs to return to, but the younger ones have missed the opportunity of the appointment which leads to a career in medicine. They have been away already for five years. Those at home must be patient a little longer. The jobs must not be prematurely filled. Moreover, if we are to attract the best men we must realize that they are already ripe in years. The man who at 28 would gladly have accepted a post at a small salary if it offered chances of advancement, cannot at 34, with a wife and child, afford to do so. Unless teaching schools offer adequate remuneration over the lean years many of these men will take whole-time salaried posts in other branches of medicine or will go into general practice.

Physicians in the Services are not asking favours of the profession. They do not expect equality of sacrifice, but they have a right to equality of opportunity. All posts filled in wartime should be temporary in the strictest sense. However difficult it may be, they should be vacated without question when the

war with Germany and Japan is over. Then there will be open competition in which those who stayed at home will get an equal but not an unfair chance.

I have not the slightest doubt that, given the opportunity, many of our younger physicians in the Services will then come to fill with credit some of the best posts we have to offer, and they will bring with them a wisdom which textbooks do not teach.

DISTRIBUTION OF PENICILLIN

A circular from the Ministry of Health says that increasing supplies of penicillin are now becoming available for the treatment of civilian patients and the Minister is anxious that it should be more widely used in suitable cases. It has not yet been possible for it to be placed on the market freely through commercial channels, and some degree of control in its use is still essential. Hitherto supplies for civilian patients have been distributed through the university medical schools and the teaching hospitals, but the Minister wishes to relieve these bodies so far as possible of the detailed responsibility for control. It has been decided therefore to increase the number of distributing hospitals or centres and to revise the "Recommendations of Conditions to be Treated."

Functions of Distributing Centres

The distributing centres have been chosen, in consultation with the university medical schools, from among the hospitals, both voluntary and municipal, which have adequate laboratory facilities and have had experience in the use of penicillin, regard being had to their geographical position in relation to the main centres of population.

For the present the issue of penicillin will be free of charge. While detailed returns of the types of cases treated will not be required, records of consumption and of distribution to other hospitals, etc., with receipts for quantities so supplied, should be kept and made available for inspection by an officer of the Department.

Each distributing centre would receive supplies of penicillin direct and in turn would distribute an immediate supply to the hospitals in its neighbourhood which have laboratory facilities and experience in using penicillin. Other hospitals in the area would be entitled to receive penicillin on application for the treatment of suitable cases. Each distributing centre would further be authorized to issue penicillin to private practitioners for the treatment of suitable cases at home or in a nursing home whom it is not practicable to transfer to hospital. It is suggested that the distributing centre should form a small medical committee to be responsible for the further distribution and to give advice in doubtful cases.

The Minister has in view the desirability of at least doubling the use of penicillin in the course of the next two months with progressive increase, and it is suggested that an immediate issue of 2 m.u. per month for every 100 beds for patients with acute diseases should be made. Further supplies in excess of this amount will be available as required on application to the Ministry. It is understood, however, that the university medical schools have a substantial reserve of penicillin for civilian cases, and if a further supply is urgently required in emergency application should be made to the nearest university medical school. Present arrangements for the supply of penicillin for Service patients will continue.

Syphilis and gonorrhoea have been transferred to the list of conditions which may be treated in suitable cases, and it is anticipated that increasing use will be made of the drug for these purposes. It is intended that the V.D. clinics attached to the several hospitals will have supplies allotted to them from the distributing centre.

Revised instructions on the indications for the use of penicillin, and methods of administration, are enclosed with the circular for distribution to the local hospitals.

Owing to staff difficulties the manufacturers will have to "stagger" the dispatch of penicillin, and different hospitals will receive their supplies on different dates in the month. Any hospital needing penicillin before the initial distribution arrives should apply to the appropriate university medical school. Hospitals which have supplies of penicillin for Service cases may borrow for the treatment of civilians until the arrival of the first quota.

E. L. Cohen (*Brit. J. Derm. Syph.*, 1945, **57**, 10) examined the incidence of acne in a group of 500 women and found that the maximum age incidence was 19 to 21, but that acne was still common in the late twenties and early thirties. In a group of 207 men in whom acne was found the largest age group was 18 to 23, but 25% were over the age of 25. The distribution in a group of women showed that acne was commoner on the trunk than elsewhere.

Reports of Societies

MASKING EFFECT OF SULPHONAMIDES IN OTITIS MEDIA

The masking effect of sulphonamides when used in the treatment of acute otitis media was the subject of discussion in the Section of Otology, Royal Society of Medicine, on March 2. Mr. L. GRAHAM BROWN, president of the Section, was in the chair.

The subject was introduced by Mr. I. MALCOLM FARQUHARSON, who presented a statistical comparison of 1,194 cases of acute otitis media treated in pre-sulphonamide days from 1932 to 1936 with 1,390 cases treated with a sulphonamide from 1937 to 1943. The cases requiring mastoidectomy in the pre-sulphonamide group amounted to 29%, and in the sulphonamide group to 13%, but he said that sulphonamides masked certain signs and symptoms of mastoiditis by permitting a latent course of infection. By delaying drainage the masking effect was increased, and the instances of deafness and chronic ear disease were multiplied. The pathological processes of acute infection of the middle ear and mastoid were altered by sulphonamides, giving rise to a "mottled" distribution of the disease, with special affinity for the dural plate. There was an accumulation of evidence to show that sulphonamides altered the translucency of the mastoid cells to *x* rays.

Mr. G. EWART MARTIN said that nowadays a large number of cases were treated outside the hospital by private doctors, and it was among these cases that eventual deafness appeared. A typical case was that of the person who came to hospital with a history of acute ear; he had seen his own doctor and had been given "a box of pills," possibly sulphathiazole, and had been told to take two thrice a day. Later the doctor had seen him and pronounced him well, but about three weeks later he came to hospital complaining of severe deafness. On the other hand, among private cases, which were usually seen quite early by the otologist, persisting deafness was infrequent. The trouble was the indiscriminate use of sulphonamides by some general practitioners, who had found that when they were given the temperature went down and the pain ceased; but deafness often resulted.

Squad. Ldr. G. H. BATEMAN said that he had been through a number of case histories in the R.A.F., and had figures which suggested, unlike Mr. Farquharson's, that the use of sulphonamides had increased the number of mastoid operations carried out. Of two groups of patients, one treated with sulphonamides and the other not, those in the first group had had more mastoid operations; but the statistician to whom he showed the figures declared that statistically they were not valid. His own feeling was that acute otitis media was not beneficially influenced by sulphonamides, but that with sulphonamide in the background expectant treatment was adopted to a greater extent than in the pre-sulphonamide era, and therefore better results were obtained.

Mr. A. R. DINGLEY agreed that in pre-sulphonamide days it was usual to open the mastoid rather earlier than was now the rule. The emphasis on the possible injury to hearing was important. The trouble was due to the fact that these drugs were often expected to take the place of necessary surgical drainage. After other signs had cleared up the ear drum might be found to be oedematous, and there might be a marked degree of deafness. Such an ear was potentially dangerous.

Squad. Ldr. DICKSON said that in the Services it was the rule to get cases of acute otitis media as early as possible into hospital and to advise medical officers that they should wait until the patient was in hospital before giving sulphonamides. Thus the cases were under the observation of an otologist from the moment the drug was begun.

Mr. TERENCE CAWTHORNE said that such a discussion could be satisfactorily concluded only if a series of cases were treated without sulphonamides and a corresponding series with sulphonamides. One other aspect of the use of sulphonamides which might prove important was the likelihood of some patients, on feeling sick after one or two doses, refusing to continue the treatment.

Mr. OWEN pointed out that in civil life early treatment of these cases in hospital was impossible unless otitis media was made a notifiable disease. An authoritative statement ought to be forthcoming advising practitioners as to the use or non-use of sulphonamides in the early stages. Mr. WILSON said that he was now operating on far more mastoids than he had ever done before, and this he attributed partly to the giving of sulphonamides. He also urged that a small committee of investigation should be formed with a view to correlating treatment and issuing a statement. Mr. THACKER NEVILLE said that family doctors in his area were treating ear cases with sulphadiazine, and therefore the otologist did not see them, and the ears were never inflated after the inflammation had subsided. The want of such inflation, he thought, was partly the cause of deafness. Mr. H. V. FORSTER mentioned the comparative insolubility of sulphadiazine, which on some grounds might be preferred to the other compounds. He urged that if the drug was given potassium citrate should be prescribed and plenty of fluid.

Mr. RITCHIE RODGER said that the problem was a physical as well as a chemical one, and chemotherapy was of no use on the physical side of the problem. The first symptom that brought the patient to the doctor was earache, which was nearly always due to tension. With these new drugs the symptoms were suppressed, and the physical side of the problem was not dealt with, so that deafness from an adhesive process in the middle ear might result. It should be explained to general practitioners that the middle ear did not respond to these drugs in the same way as the lungs and the meninges because in the ear there was not the very efficient drainage which Nature had provided for serum in the brain and in the lung. Major HOUPLE, U.S.A.M.C., mentioned a case of mastoiditis which, masked by penicillin, went on to brain abscess.

Mr. GRAHAM BROWN said that they had all had examples of these cases in which masking had occurred, and could come to the conclusion that a sulphonamide had been administered, perhaps unwisely. In hospital and even in private practice very few cases of acute otorrhoea came early enough to permit of treatment with a sulphonamide. Certain unhappy results which he had seen had made him rather disinclined to use sulphonamides, though he did recognize their value, particularly in complications.

Mr. FARQUHARSON, in reply, said that even with adequate dosage of the drug certain masking effects might persist. The opinion of the meeting was evidently against the promiscuous use of the drug. Squad. Ldr. Bateman had said that mastoid operations had been more frequent since the drugs came into use; this was not borne out by his own records. He did not think that resulting deafness was due, as Mr. Thacker Neville had suggested, to lack of subsequent inflation. As for masking by penicillin, it was conceivable that this could occur in the same way as with a sulphonamide. The masking in otitis media was very largely due to the drug not reaching the mastoid owing to thrombosis of the vessels, and that might equally occur with penicillin.

INFECTIONS OF THE EYES

At a meeting of the Fever Group of the Society of Medical Officers of Health on March 9, Dr. M. MITMAN presiding, a discussion on the epidemiology and treatment of some eye infections was opened by Prof. ARNOLD SORSBY. He said that a provisional analysis of 9,622 certificates of blindness in the L.C.C. and Middlesex areas showed that 1,427 persons (or 15%) were blinded by infectious diseases. In approximately three-quarters of this 15% ophthalmia neonatorum and syphilis were the responsible factors, ophthalmia neonatorum being the cause in 265 cases, congenital syphilis in 516, and acquired syphilis in 290 cases. The remainder of the 15% was contributed largely by trachoma (134 cases) and the various specific fevers (103 cases). The low incidence of infectious disease among the causes of blindness in England and Wales was in striking contrast to the conditions obtaining in countries like Egypt and in the Middle East generally, where over 80% of all cases of blindness were caused mainly by the acute ophthalmias, and to a lesser extent by trachoma. At one time, however, infection was the major cause of blindness in England. At the beginning of the last century smallpox was the largest single factor, and towards the end of the century ophthalmia neonatorum. Even as late as 1922 ophthalmia neonatorum was the cause of blindness in some 30% of all children at blind schools; by 1942 the incidence had fallen to about 10%. This decline had shifted the emphasis from infection to other factors—genetic anomalies in the young and degenerative lesions in the elderly.

Though the incidence of blindness from ophthalmia neonatorum had fallen so markedly, there was no evidence that the disease itself had declined to any extent. A clearer appreciation of the aetiology of ophthalmia neonatorum was needed, particularly as it had now been established that only some 20 to 25% of cases were gonococcal in origin. At least 10% of cases were due to virus infection, and the aetiology of this and other types needed clearer recognition. While congenital syphilis had also declined to a gratifying extent, other transmitted maternal infections were only now being recognized, toxoplasmic choroido-retinitis being an example. The decline in the incidence of trachoma in childhood had only emphasized that there was still a considerable residue of trachoma in the adult population, and these people constituted a possible source of epidemic outbreaks.

The sulphonamides and penicillin were of great help in the treatment and elimination of infectious eye disease. Ophthalmia neonatorum was now easily controlled by the oral administration of the sulphonamides and the local application of penicillin. The acute ophthalmias of tropical and subtropical countries also responded well to the sulphonamides, while in trachoma local application of the latter had rendered the classical methods obsolete. These new drugs were, however, likely to be effective only in the bacterial infections of the outer eye. Intraocular inflammation was rarely bacterial in origin, and such common conditions as iritis and choroiditis still needed intensive study.

In reply to questions Prof. Sorsby said that it was doubtful whether the routine prophylactic use of silver had made any major contribution to reducing the incidence of ophthalmia neonatorum, nor did he think the sulphonamides would be likely to do so. Routine instillation of penicillin eye drops at birth deserved extended trial when supplies became more plentiful. The placenta was a powerful barrier to the transmission of intra-uterine infections, and it remained uncertain which organisms could pass. Much of what had been called intra-uterine inflammation was really genetic disease. This required much closer study from the medical profession than it had received in the past. There was, nevertheless, a considerable field for the study of transmissible intra-uterine infections.

The Joint Tuberculosis Council, which met in London on Feb. 17, re-elected Dr. James Watt as chairman, Drs. D. P. Sutherland and N. Tattersall as vice-chairmen, Dr. A. P. Ford as honorary treasurer, and Dr. Norman England as honorary secretary. The Council adopted a resolution recording its deep sense of loss at the death of Sir Henry Gauvain, its chairman 1926-9. It was decided to ask the British Medical Association to receive a deputation representative of the Joint Tuberculosis Council and the Tuberculosis Association on the need for a national campaign for a safe milk supply. The National Association for Prevention of Tuberculosis was invited to join in the deputation. Dr. G. Jessel reported that ten memoranda on tuberculosis subjects had been prepared for publication for U.N.R.R.A. The memoranda would form a manual for distribution to medical practitioners and others dealing with tuberculosis problems in occupied countries after liberation, and 1,000 copies of the manual would be distributed to tuberculosis workers in Britain by the Ministry of Health. The subjects covered by the memoranda included administration, dispensary and sanatorium treatment, rehabilitation, bacteriological diagnosis, differential diagnosis, mass radiography, surgical treatment, non-pulmonary tuberculosis, and tuberculosis in childhood. Approval in principle was given to a proposal submitted by the Committee on Education (jointly set up with the N.A.P.T.) for the establishment of a Tuberculosis Educational Institute.

The British Orthopaedic Association has elected the following Honorary Members: Sir Alfred Webb-Johnson, Bt., P.R.C.S., Prof. R. I. Harris, Toronto, Prof. N. N. Priorov, Moscow, and Mr. J. Rhaiadr Jones. It has also elected two Corresponding Members: Prof. Sten Friberg, Stockholm, and Dr. A. P. Kotov, Kharkov.

Correspondence

Women in Labour

SIR,—Nearly one hundred years ago Simpson failed in his attempt to give relief to all women in labour because his contemporaries and his successors did not try to understand Simpson's teaching, and they never mastered the technique of chloroform analgesia in labour. It looks very much as if a very safe and simple method known as gas-and-air analgesia might meet with a similar fate, not because patients are being killed by gas and air, but because of unsatisfactory analgesia resulting from unsatisfactory administration.

I know that at least 80% of all patients should get adequate relief of pain from gas if due and proper attention is paid to the details of administration, yet I am satisfied from my own observations that all over the country, in hospitals and in homes, this attention to detail is not forthcoming. I have seen machines out of order, gas cylinders empty, facepieces that do not and could not fit the patient's face, and, in fact, both apparatus and technique of administration which could not be expected to give analgesia. I have found that there is also complete failure to instruct the patients how the gas should be used and to see that the administration is started sufficiently early in labour. So often I find patients, well advanced in the second stage of labour, rushed into the labour ward, given the facepiece of the machine (which they have no idea how to use), and then just told to "get on with it." This slackness and indifference to the suffering of women are deplorable features of our national life to-day.

In 1939 we were making very real progress in our attempts to relieve all women from the pains and misery of labour, but during the last five years there has been a wave of shallowness and insincerity passing over our land. I can only hope that when this war is over our young people returning from the Services will bring with them into our daily life a new spirit of service and duty towards their fellows. That this spirit of service is needed there can be no possible doubt. Following an article in the *Nursing Mirror*, I received letters from women in all parts of this country. These letters all told the same sad story—a story of indifference and neglect, a story of avoidable suffering and misery, which must make us utterly ashamed of our national maternity services. How are we going to explain away this indifference and neglect of the sufferings of their young wives to our returning soldiers, sailors, and airmen? Truly our maternity services leave much to be desired.

From gas-and-air analgesia, and more recently from trilene-and-air analgesia, we can, without any possible doubt, promise a very high degree of relief from the pain and misery of labour. Yet we are doing so little, so very little. Are we to say to returning warriors who have endured so much: "Oh, yes, we can help your young wife tremendously, but really it is too much trouble, so we are not going to bother." Has then the work of our women in this war been of no account that we must allow this deplorable state of things to continue?

One strange fact I have noticed. Our strongest supporters in our attempts to obtain analgesia in labour for all women have been old and elderly male county councillors; our strongest opponents, young women medical officers of health. Perhaps there is going to be a place in our post-war world for the old men after all that has been said about "youth at the helm."—I am, etc.,

New Barnet. JOHN ELAM.

Ovariotomy or Caesarean Section?

SIR,—In a perfect world with perfect antenatal supervision all ovarian cysts will be diagnosed in early pregnancy and removed. On the one occasion when I was forced to remove a cyst during the second stage, the membranes having ruptured 24 hours previously, I had the greatest difficulty in getting the uterus back into the abdomen. Had not the risk of sepsis been present I should certainly have performed Caesarean section.—I am, etc.,

London, W.1. MALCOLM DONALDSON.

A Faculty of Ophthalmologists

SIR,—The letter of Dr. C. R. Duncan Leeds (March 3, p. 311) is likely to create a false impression. There is no question of increasing the number of ophthalmological organizations, since the Council of British Ophthalmologists will cease to exist as such on the inception of the Faculty. Indeed, if, as is desired, a certain union takes place, the number will be reduced to two—the Faculty and the Ophthalmic Group Committee.

The establishment of two kinds of members appeared to be inevitable, but the Faculty certainly hopes to be in a position to promote the interests of the younger men. The promoters did not view with favour the perpetuation of the "part-time ophthalmologist," who will, however, continue to be adequately represented by the Ophthalmic Group Committee. The closest liaison between the Faculty and other representative bodies such as this is earnestly hoped for and anticipated.

The Council of British Ophthalmologists does not consider that "much help in the proposed National Health Service" will be required from part-time ophthalmologists, and the scheme which the council has envisaged will, it is hoped, ultimately function without them. One readily agrees with Dr. Leeds that, in the interim, "the Ophthalmic Group Committee is best constituted to be their guardian angel."—I am, etc.,

45, Lincoln's Inn Fields, London, W.C.2. FRANK W. LAW, Hon. Secretary, C.B.O.

Artificial Respiration

SIR,—The letter from the Royal Life Saving Society (March 17, p. 387) shows that I was unable to convince them at my 1944 demonstration that the rocking method of resuscitation is more effective than Schäfer's. I had hoped to convince them (by subsequent *x*-ray photographs) that when the toneless diaphragm had been pushed up by Schäfer compression it did not recoil down again elastically but stayed put, thereby making Schäfer's method impotent in advanced asphyxia. But unexpected difficulties have so far prevented Dr. Din and myself from demonstrating this by *x* rays. However, there is other evidence for this doctrine, such as the following.

1. When one side of the diaphragm is deprived of its tone by cutting the phrenic nerve its dome rises at least two inches.

2. In the rocking method the weight of the abdominal contents pushes and pulls the flaccid diaphragm up and down like a piston. Dr. J. E. Bannen showed this by a portable *x*-ray in my original case of diphtheritic paralysis of the diaphragm.

3. Dr. H. W. Haggard, the U.S.A. expert in respiration, was at hand when a man died suddenly of cardiac failure. He promptly started Schäfer's method, which ventilated the lungs normally at first but failed completely to do so after 10 to 15 minutes. Presumably the toneless diaphragm had been pushed up and stayed there: the elastic recoil, on which Schäfer's method relies for inspiration, was absent. This view was confirmed when an overdose of chloroform was given to a cat till respiration ceased. Schäfer's compression produced normal ventilation (measured) at first, but this ceased after 10 minutes and the lungs were found to be collapsed. Prof. R. R. Macintosh in 1944 simulated the condition of a drowning man by ether anaesthesia of two volunteers with periods of apnoea induced by hyperpnoea. Results in the two subjects were: for Schäfer 340 and 530 c.cm.; for Silvester 400 and 650 c.cm.; by rocking 580 and 860 c.cm. Results of artificial respiration in conscious subjects are notoriously misleading, but the above tests are conclusively in favour of rocking over Schäfer as regards ventilation of the lungs.

4. The intricate experiments of Prof. Hemingway in 1944 showed the definite superiority of rocking over Schäfer's method in aiding the circulation. This is most important, for it is useless to oxygenate blood by pumping the lungs if it is not propelled to the respiratory nerve cells which maintain respiration (and to the heart muscle).

5. Finally, there are the very many instances of the failure of Schäfer's method, and, in particular, the lack of inspiratory recoil such as was observed by Surg. Lieut.-Cmdr. Gibbens. This led him and Surg. Lieut. de Launay to adapt the rocking method to naval usage and to its later official description in *First Aid in the R.N., 1943*, advocating that it replace Schäfer's method whenever possible. I am permitted to state that the

proportion of successful resuscitation in the Royal Navy since rocking has been used has increased.

I can claim to have no bias against Schäfer's method because in a booklet by me on artificial respiration (soon to be published) it is recommended for use in adults when the rescuer is single-handed. But it fails much oftener than it succeeds, and we must strive for better methods to save the failures. It is not fair or right to expect a society of philanthropic laymen to pronounce judgment on rival methods of resuscitation—a subject which has now become highly complicated. What is needed is a small expert subcommittee of perhaps the Medical Research Council, not only for research but to give official sanction that certain methods deserve to be tried out by the societies which instruct first-aiders, who should also be asked to suggest practical improvements. Advances will come only by the co-operation of doctors, first-aiders, and laboratories.—I am, etc.,

FRANK C. EVE.

Penicillin in Bacterial Endocarditis

SIR,—Since the announcement made in these columns (Feb. 17, p. 232) of the formation of ten centres to investigate the value of penicillin in the treatment of bacterial endocarditis, three further research centres have been formed in Newcastle, Birmingham, and Glasgow. Physicians are invited to refer patients suffering from subacute bacterial endocarditis to: Prof. F. J. Nattrass, Royal Victoria Infirmary, Newcastle-upon-Tyne; Prof. K. D. Wilkinson, Queen Elizabeth Hospital, Edgbaston, Birmingham; Prof. J. W. McNee, or Dr. W. R. Snodgrass, Western Infirmary, Glasgow.—I am, etc.,

RONALD V. CHRISTIE.

Shock Therapy and Conditioned Reflexes

SIR,—Relative to Prof. R. J. A. Berry's letter (March 17, p. 383), I would like to join issue with him on certain points. Like the great "reflexologist" Pavlov himself, your correspondent disregards the fact that determining the formation of any conditioned reflex is the anticipatory fulfilment of a wish—a wish, that is, for pleasurable gratification or the relief of instinctual tension. In his concern with the cortical associational system, which closely parallels Freud's second psychic instance or the reality principle (see Freud's *Interpretation of Dreams*), Pavlov leaves out of account anything equivalent to Freud's basic and therefore most important first psychic instance, better known as the pleasure principle. Though with supplements and modifications later in life, Pavlov earlier denied that behaviour was to be regarded as purposive—i.e., the fulfilment of a need—and, according to Frolov, one of his pupils, at one time even went so far as to impose fines upon any of his assistants who dared demur. Nevertheless, the inescapable truth remains that there can be no anticipatory gratification, no conditioned reflex, and no continuance of such as may already have been formed once newer engrams have had time to develop, recording repeated failure of realization of the looked-for gratification—e.g., food—unless these latter have themselves somehow been modified or destroyed. These newly formed inhibitory engrams also serve indirectly the pleasure principle by the avoidance of pain (disappointment).

Upon a basis of experience the animal has learned to avoid expectancy, and since their formation is based upon actual external experience, these newer engrams also serve the reality principle. What your correspondent euphemistically refers to as the "recall" properties of shock therapy are, in my view, merely the "inhibition of an inhibition," and amount to an actual loss of judgment occasioned by electroconvulsive therapy (E.C.T.). The valuable new engram which represents the enlightenment of further experience has been deleted thereby, and the animal's capacity for adjustment to reality temporarily diminished. When so viewed, this, while perhaps less a matter for enthusiasm, is an observation no less important when cleared of positive misunderstanding. Incidentally I would suggest that the same significance attaches to Gellhorn's interesting observations upon the effects of insulin as a restorative of the conditioned reflex reported in your annotation (Feb. 10, p. 191). In both cases when properly assessed the apparent gain is clearly a loss from the point of view of the efficiency and aptitude of the animal's performance—i.e., it behaves less intelligently. This conclusion suggests that so far as conditioned reflexes are concerned, both E.C.T. and insulin operate by detraction and not by addition—a point of some importance. That many undesirable though later-acquired inhibitive tendencies exist among the psychopathological formations of man and can with advantage be removed is a corollary which seems reasonably to follow.

To return, leaving this digression, it is for the reasons above stated that these purely neuronic conceptions, whether of dreams, the vagaries of memory, or of Pavlov's conditioned reflexes, lose much of their validity, inasmuch as they omit entirely the essentially affective basis of animal activity upon which all that follows in the neuronic associational sphere is but a modifying superstructure. From the evolutionary point of view the higher organic nervous system, or neopallium, is but a refinement of recent development. Living organisms possessing the rudiments of mind long preceded that development, but the gratification of instinctual needs has never been replaced and still holds unquestionable priority as the determinant of animal behaviour, including, of course, man.—I am, etc.,

Warlingham Park Hospital. WM. H. SHEPLEY.

Deaf Aids

SIR,—I have seen the correspondence on the subject of deaf aids which has appeared in your *Journal*. I have been deaf since 1916 with middle-ear deafness, and having led an active business life since, which would have been impossible without the use of hearing aids, my experiences do support the statement that considerable sums must be set aside yearly for the upkeep of these. My expenditure has been over £50 a year, but I have had some twenty sets.

I am a member of some six technical societies—I have in fact been chairman of the Regional Sections of the Royal Institute of Chemistry and the Society of Chemical Industry—further, I have been upon a number of technical committees meeting in London, Leeds, and elsewhere, for which much travel has been necessary. Thus, I usually take two portable sets, of which I have five, in case one should break down. The portable sets do not "travel" well and a knock on a suitcase in the corridor of a train has been sufficient to break a valve. I have two all-mains sets in my offices and one at my home; I sometimes use one of these in London at meetings providing I know beforehand that a convenient connexion is available. I carried a portable set strapped to my belt as a Home Guard dispatch rider, but this proved too costly owing to breakages.

Service has sometimes taken months. I have always had sympathetic treatment from the manufacturers, but they are in turn dependent upon various makers of accessories who are not sympathetic. Apart from the time of servicing, transport is a problem. Twice I have had sets smashed in the post. Many incidentals in the upkeep of these aids are forgotten: e.g., telephones lose their sensitiveness eventually—especially those of the bijou type—and I have four away for servicing with little hope of repair or renewal.

Dr. Littler has done great work in describing simple aids, but it must be realized that deaf people are not necessarily mechanically minded enough to build or repair sets. Although a crystal microphone can doubtless be readily made into an amplifier, my experience in building sets to circuits issued by firms making components has not been happy, even though I have a laboratory at my disposal. If professionals are asked to do this the cost is likely to be high. As it is I will not allow an amateur to service a set because once I had a set so "pied up" that the manufacturer refused to handle it afterwards.

My experience with batteries of the most reputable brands has been good but the supply has been bad, despite the promises made in the House. The cycle-lamp type has given usually an hour's good life. After rest periods their activity lasts for periods which follow a logarithmic decrement. Rarely have I had less than two months' life from the bijou high-tension battery. What is less understood is that a low-tension battery very soon loses enough energy to activate an amplifier, though it still has ample power to work a flash-lamp, and batteries which have a considerable amount of energy have to be scrapped. I attended some meetings in London last week and

half used up six low-tension batteries. Two others of unknown make I bought from a shop in Westminster were worthless although they were satisfactory by the usual shop-counter test—one lasted two minutes. Despite the fact that in my home and office I am independent of portable aids, yet I spend some 5s. a week on batteries for portable sets.

One great service which could be done for deaf people is for some influential person to claim income-tax rebate on the expenditure incurred in the maintenance of these aids, get it, and so establish the precedent. Such expenses are "necessarily incurred in the execution of one's business," for without them it would be impossible to earn. Although it is obvious I should be able to pay little or no income tax without the aids, yet the Income Tax authorities do not accept the plain implication of their own definition of expenses. I hope the publicity which has appeared in your *Journal* will help to change this view, since a sum of £25 per annum will hardly cover the expenses of a user of deaf aids who has to carry these about in the course of his duties, and this is a considerable sum for those who naturally find it difficult to compete in the labour market. I speak of those whose deafness is such that the simple one-battery-transformer aid will not suffice. In fact I believe, from intimate knowledge of many deaf people, that when the degree of deafness is such that an aid must be used the simple type is of little value and valve aids must be sought.

I apologize for the length of the letter, but this matter is of especial interest to those deafened in the last war—and this.—I am, etc.,

A. H. DODD, M.A., F.R.I.C.,
Chief Chemist, Thorncliffe Works, near Sheffield.

Injection of Solvochin

SIR,—Dr. Frank Hawking's report (March 24, p. 412) must be of great interest to all who have used solvochin, but there is a danger that others, who have no practical experience with it, may draw the conclusion that the injections are either painful or harmful. In practice intragluteal injections of solvochin, properly given, are very well tolerated, and an experience extending over a period of 3 years and more than 100 cases has shown that complications must be very rare. In the treatment of malaria I have used 8 injections spread over 4 days and there have been practically no complaints of pain. This is in striking contrast to my experience in liver therapy in tropical sprue. Local necrosis is probably unavoidable when quinine is injected, but should not be allowed to influence us against using a preparation which is clinically efficient, economizes quinine, ensures certainty of administration, and is so well tolerated by patients.—I am, etc.,

London, W.1. ALEC WINGFIELD.

Blackwater Fever and Malaria

SIR,—In the *Journal* of March 10 (pp. 325 and 328) are two papers, "Blackwater Fever in West Africa," by Lieut.-Col. E. W. Skipper and Capt. G. L. Haine, and "Diagnosis of Malaria in West Africa," by Squad. Ldr. D. G. Ferriman. Skipper and Haine mention the "characteristic slow pulse of malaria." Characteristically, the pulse of malaria seemed to me rapid in comparison with sandfly and typhoid. Again, they write: "Preceding and during the disease [blackwater] parasites are scanty in the peripheral circulation, often disappearing entirely early in the illness." This observation agrees with general experience. Later they state: "We consider it [alkali] should be used as early as possible—in fact, the urine of all our cases of malaria was kept alkaline as a routine." Sinton has urged this routine since about 1908 in India. The authors' further recommendation that "protein should be restricted until well into convalescence" is open to question in view of recent work.

Squad. Ldr. Ferriman approves of the therapeutic test in doubtful cases of malaria. The therapeutic test is valuable if certain conditions are observed. A distinguished colleague of mine, whose professional skill I greatly admire and respect, once asked me to see a case of "? malaria with early jaundice and slipping into coma." This patient had *falciparum* malaria—proved by blood film—and had received 30 gr. of quinine a day for five days. I went with my friend to see the patient, who was indeed very ill. My colleague thought the patient could not possibly have malaria and that my laboratory technician had been mistaken in his examination of the blood film. I asked for a specimen of the patient's urine. This was provided and we tested it with Tanret's reagent: *there was no quinine in this patient's urine.* The sick man was at once given quinine in solution by mouth and by injection. He made a good recovery. Ferriman writes: "The activation of latent malaria by a non-malarial illness was uncommon in the area." It is very common in other parts of the world; influenza is one of the most troublesome resurrectionists. Most people will agree upon the value of his remark: "Definite tenderness under the left costal margin in the absence of a palpable spleen." Samuel Pepys wrote, on Nov. 5, 1665: "All our physicians cannot tell what an ague is, and all our arithmetique is unable to number the days of man."—I am, etc.,

FRANK MARSH,
Pathologist, Anglo-Iranian Oil Company.

Shall we Nationalize Medicine?

SIR,—Prof. Ryle's letter (March 31, p. 456) scarcely calls for more than my assurance that he is right in thinking that a difference of opinion on the merits or demerits of nationalizing medicine cannot disturb the mutual respect and esteem of many years' standing.

And yet I must dissent from the suggestion that the doctor not being "political" implies the assumption that he cannot be both a good doctor and a good citizen. I have stated elsewhere that I believe the doctor to be potentially the most useful citizen the community possesses because the contribution he is able to make, through medicine, is of such vital importance to his fellows.

Confusion results from the use of the word "politics" in two senses—the sense of civil administration, and the sense of party or partisan influence. When medicine infiltrates politics it is at the former, and higher, level that it operates; when politics infiltrate medicine it is, unfortunately, at the latter, and lower, level. Prof. Ryle's acknowledged mental integrity is proof against any suspicion that he, personally, would help to sabotage the tremendous social service which the profession of medicine, of which he is so distinguished a member, is able to confer upon the nation. But some of us are a little anxious lest he be taken off his feet by the ground-swell of what, while claiming to effect an advance in the people's interest, would really be a stifling totalitarian agitation.

Prof. Ryle thinks we can only settle the issue by the method of trial and error, whereas I suggest that we think again before making such a perilous venture.—I am, etc.,

London. HORDER.

Examinations in Stages

SIR,—The last paragraph of Capt. H. B. Hewitt's letter (March 17, p. 387) raises an important issue applicable to other examinations—namely, whether it is essential to pass an examination in all parts at one sitting or not.

The Conjoint Board, which is an essentially practical body, permits the passing of its examinations in stages from "pre-medical" to "finals." For example, anatomy or physiology may be passed separately if at least a few marks are obtained in the unsuccessful subject. At the next sitting it is only necessary to take one subject. Until last year in the Second M.B. it was necessary to pass anatomy, physiology, and pharmacology at the same time. The regulation has now been modified so that pharmacology may be taken separately.

For the Primary F.R.C.S. it is insisted that anatomy and physiology be passed at the same time, so there are many candidates who have passed in both subjects on different occasions. This illustrates one of the failings of examinations in their present form, for surely the fact that a subject has been passed should indicate that the candidate has sufficient knowledge with which to satisfy the examiner. As the Primary F.R.C.S. is not a qualifying examination it is impossible under present conditions to take time from clinical medicine to work full time. This being so it might surely be considered whether the parts could be passed separately. This need not entail lowering the standard—an expedient to be strenuously avoided, especially during war when so many standards inevitably deteriorate.—I am, etc.,

London, W.1. P. F. KENNISH.

Obituary

SIR THOMAS LEWIS

Dr. IVOR J. DAVIES (Cardiff) writes:

Thomas Lewis spent his preclinical years at University College, Cardiff, where his exceptional ability was soon recognized. He took the science degree of the University of Wales in his stride with first-class honours in both anatomy and physiology. A natural aptitude for research became evident in his physiological studies and was promptly encouraged by his teachers—the late Prof. J. Berry Haycraft and his demonstrator Swale Vincent, from whom Lewis soon acquired a perfection of method in experimental technique. Swale Vincent afterwards did valuable research work with Schäfer at Edinburgh and later was professor of physiology at Winnipeg and finally at the Middlesex Hospital. The association with Swale Vincent must have had a most inspiring influence on Lewis's early urge to research work. He used the stethoscope and went occasionally to the Infirmary to listen to hearts, normal and otherwise, and it was perhaps here that he first became aware of the frequency of the functional systolic murmur. He was expert with the sphygmograph, and his pulse tracings were the envy of his fellow students. Lewis was reserved by nature, but became friendly with those who could join him in country pursuits around his old home, and his life-long hobby was a keen interest in birds. The British Association held its annual meeting at Cardiff in 1920, and it was eminently fitting that Lewis was president of the Section of Physiology on that occasion. The completion of our school of medicine was impending and Lewis was prepared to stimulate public interest at one of the Association meetings, but the College authorities of that day disapproved. Lewis was naturally indignant always with anything which obstructed progress. The school of medicine was completed in the following year as a separate college of the University. The air raids compelled the evacuation of the medical school of University College Hospital, and Cardiff was proud to accept a large number of its students with some of their full-time teachers. We were further honoured when Sir Thomas Lewis came for twelve months to share in the teaching of the London students, and we all profited immensely. He told me how refreshing it was to teach general medicine again, and reaffirmed his conviction that a sound experience of general medicine was an absolute necessity before specializing in any section of it. He was elected to the honorary staff of our hospitals and was himself stationed at the Llandough Hospital, but would readily come to see any case of particular interest at the Royal Infirmary, where he had obtained his earliest clinical knowledge of the circulation. Wales will always honour him as one of her most illustrious sons who achieved great academic distinction in her University and whose wonderful skill was afterwards applied to beneficent and epoch-making discovery in medicine.

We learn with regret of the death of Dr. SAMUEL BURNS CARLISLE, of Dromore, Co. Down, which took place in the District Hospital, Banbridge, on Feb. 24. Born in 1899, he was educated at the Royal Belfast Academical Institution and the Medical School of the Royal College of Surgeons in Ireland, where he obtained the L.R.C.P.I. and L.R.C.S.I. in 1923. After acting as house-surgeon and house-physician in the Meath Hospital, Dublin, and as an assistant medical superintendent in Peamount Sanatorium he took up his late father's practice in Dromore. He joined the B.M.A. soon after qualifying, and was chairman of the Portadown Division in 1933–4. R. M. writes: Simple, honest, and unassuming, Dr. Carlisle quickly became the counsellor and friend of many. Though it would never have occurred to him to think so, he personified the noblest tradition of Ulster medicine. His complete selflessness, his innate sense of vocation, his quick sympathy and resource, and his diagnostic skill, which seemed to be at once instinctive and cultivated, all combined to make him the ideal family doctor. Indeed his high standard of service to others and his inability to refuse his aid at any hour probably were the predisposing cause of the duodenal ulceration which cut short his life.

We regret to announce the death on March 4 of Dr. W. H. LAMPLOUGH, who practised for many years at Alverstoke, Hants, with his elder brother Dr. Charles Lamplough. Wharram Henry Lamplough was born on July 18, 1878, and from Bedford Grammar School entered St. Bartholomew's Hospital and continued his medical education at Newcastle-upon-Tyne. He took the English Conjoint diplomas and the M.B., B.S. degrees of Durham University in 1903, and proceeded M.D. four years later, taking also the D.P.H. After house appointments at the Royal Hants County Hospital and the London Temperance Hospital he settled in general practice at Gosport and Alverstoke, becoming police surgeon for the district, joint medical officer to the post office, and M.O.H. and school medical officer for Gosport. He served in the last war for a year as temporary lieutenant, R.A.M.C., and in 1923 was appointed honorary medical officer to the Gosport War Memorial Hospital and medical superintendent of the Isolation Hospital at Elson. Dr. W. H. Lamplough was a member of the Hants County Panel Committee continuously from 1915, and at the Annual Meeting of the B.M.A. at Portsmouth in 1923 was hon. secretary of the Section of Public Health. A man of fine physique, he was a good lawn tennis and badminton player and won the Hants golf championship in 1912.

Dr. ALEXANDER SMITH ALLAN, late of Calcutta, died on Feb. 4 at Montacute Gardens, Tunbridge Wells, in his 76th year. He studied for the medical profession at Glasgow University, graduating M.B., Ch.B. in 1897, and after a course in tropical diseases at Liverpool took the D.T.M. ten years later. He had been an officer of the Indian Auxiliary Forces Medical Corps, retiring with the rank of major, and received the Volunteer Decoration; he was also an Esquire of the Order of St. John of Jerusalem. Dr. Allan joined the British Medical Association in 1901.

Dr. GEORGE FRANCIS WHYTE, for many years a well-known practitioner in Dundee, collapsed and died on March 6 while on duty as chairman of the Dundee Medical Board. He was born in Nairnshire on Jan. 5, 1873, son of the Rev. John Whyte, and was educated at Nairn Academy, at George Watson's College, Edinburgh, and at Edinburgh University. He graduated M.B., C.M.Ed. in 1896, and went to Dundee at the turn of the century. He was assistant surgeon to the Dundee Royal Infirmary 1907–12, served throughout the last war as an officer of the R.A.M.C. Territorial Reserve, reaching the rank of lieut.-colonel, and was awarded the Croix de Guerre with gold star and the Territorial Decoration. Dr. Whyte, who joined the B.M.A. 45 years ago, had held office as president of the Dundee Branch, was a past president of the Forfarshire Medical Association and vice-chairman of the St. Andrew's Ambulance Association; he had also been chairman of the Dundee Panel Committee. He retired from practice in 1938, but came back into harness as chairman of the Medical Recruiting Boards for the Dundee area. He is missed by his colleagues and by many friends.

Dr. ALEXANDER REID of Bolton died on March 14 aged 67. He was born at Radcliffe of Scottish descent and served an apprenticeship to teaching at a school there, and then studied at Owens College, Manchester, taking his B.Sc. in 1900, and afterwards working for a time as a science master. He returned to Manchester to study medicine and graduated M.B., Ch.B. in 1911. He served during the last war with the R.A.M.C. in France and Belgium, and in 1918 started general practice in Deane Road, Bolton. Dr. Reid joined the B.M.A. in 1918, was vice-chairman of the Bolton Division in 1940–4, and represented it on the Lancashire and Cheshire Branch Council for eight or nine years. During the winter of 1940–1 he and Mrs. Reid made nightly visits to all the air-raid shelters in the district, and he had not taken a holiday since the war began.

A memorial service for Sir Thomas Lewis, arranged by University College Hospital, was held on March 27 at St. Pancras Church. There was a large attendance of colleagues and friends, and of students and members of the nursing staff from U.C.H. Sir Henry Dale, P.R.S., gave a commemorative address from the pulpit.

The Services

Lieut.-Col. (Temp.) H. W. Featherstone, R.A.M.C., has been appointed O.B.E. (Military Division), and Capt. O. S. Hetherington, New Zealand Military Forces, has been appointed M.B.E. (Military Division) in recognition of gallant and distinguished services in the field.

Capt. (Temp. Major) T. Affleck, R.A.M.C., has been appointed M.B.E. (Military Division) in recognition of gallant conduct in carrying out hazardous work in a very brave manner.

Capt. S. S. Nazir, I.A.M.C., has been awarded the M.C. in recognition of gallant and distinguished services in Burma.

The following awards and mentions have been announced in recognition of gallant and distinguished services in North-West Europe:

M.C.—Major (Temp.) E. G. Wilbraham, and Capts. J. O. Forfar and A. G. S. Hill, R.A.M.C.

Mentioned in Dispatches.—Major-Gen. Sir Percy S. Tomlinson, K.B.E., C.B., D.S.O., K.H.P., and Brig. (Temp.) E. Phillips, C.B.E.,

D.S.O., M.C., late R.A.M.C. Cols. (Temp.) D. L. Kerr, T.D., W. H. Marston, T.D., P. E. D. Pank, J. H. C. Walker, and R. F. Walker, C.B.E., M.C.; Lieut.-Cols. (Temp.) C. W. Arnot, O.B.E., M.C., C. Bainbridge, C. E. Gallagher, A. F. Kennedy, N. J. Logie, T. F. Main, J. J. Myles, W. P. Purvis, J. M. Scott, J. L. Warner, F. W. A. Warren, and G. N. Wood; Lieut.-Cols. (Acting) R. D. Jones, G. M. Robertshaw, and J. Smith; Majors C. R. Clayburn, M.B.E., C. H. Davies, and J. O'Kane; Majors (Temp.) W. G. Bateson, D. E. H. Beattie, R. A. Binning, J. Clay, H. A. Constable, D. O. Davies, A. S. Dill-Russell, W. N. Douglas, R. G. Evans, F. S. Fiddes, T. F. R. Griffin, F. M. Hanna, J. Hoile, D. F. Hutchinson, W. B. Hynam, R. N. Lees, M.C., J. B. MacKay, J. Millar, J. A. V. Nicoll, D. N. Parry, G. F. Petty, R. J. Phillips, R. Strang, J. M. Tait, A. F. Wallace, D. J. Watterson, J. W. S. Welborn, and K. S. Wilson; Capts. P. St. G. Anderson, H. W. C. Bailie, J. H. Balmer, E. S. Bompas, W. J. Cameron, A. J. Clarke, H. Conway, P. W. M. Davidson, R. Dobson, R. C. Droop, J. O. Forfar, J. G. Gant, C. N. Gibb, R. D. Glaister, F. I. Herbert, E. K. Hole, C. G. Irwin, L. P. Lassman, H. J. C. J. L'Etang, A. W. B. Macdonald, B. Maddison, M. Makin, T. S. Maw, L. H. H. May, D. G. McConnell, J. L. McNeill, C. W. Mearns, A. D. Milne, A. D. Payne, W. Rankin, R. L. Rees, S. McR. Reid, H. A. Ripman, N. C. Rogers, G. F. Shaw, G. M. C. Smith, A. U. Somerville, G. K. Spruell, R. T. Thin, I. F. Thomson, C. H. Watts, H. L. Waugh, and C. F. Young, M.C.; Lieuts. W. N. Coombes, R. A. Green, J. S. Hayward, J. A. Hogarth, and R. H. A. Ledgard, R.A.M.C. Lieut.-Cols. C. U. Letourneau and T. M. Sieniewicz; Majors G. C. McGarry, J. C. McKellar, R. B. Murray, and H. A. Williams; Capts. K. A. C. Clarke, J. H. Fraser, and H. Marantz (killed in action); Lieuts. M. T. Cooper, R. Frechette, and J. Mackie, R.C.A.M.C.

CASUALTIES IN THE MEDICAL SERVICES

Wounded.—War Subs. Capt. T. B. McMurray, R.A.M.C.

Universities and Colleges

UNIVERSITY OF MANCHESTER

PROPOSED CHAIR OF CHILD HEALTH

At a recent meeting, reported in the *Manchester Guardian*, Lancashire maternity and child welfare authorities gave support to the proposal to establish a Chair of Paediatrics and Child Health at Manchester University. The delegates agreed to ask their local authorities for financial aid for the project and to report back to a further meeting in September. Dr. F. E. Tylecote, chairman of Manchester Public Health Committee, who presided, said that in 1942 the boards of management of St. Mary's Hospitals for Women and Children and of the Manchester Royal Infirmary addressed memoranda to the Manchester, Salford, and Stretford Joint Hospitals Advisory Board recommending such a department in the University. The Council of Manchester University were eager to support a professor of child health, but lacked the necessary funds. The setting up of such a department would obviously affect the whole of the area influenced by the University Medical School, and the Manchester Public Health Committee agreed to call this conference with a view to ascertaining what amount of financial support was likely to be forthcoming from the local authorities in that area. Dr. Tylecote contrasted the infant death rate in the industrial North, which in many towns is 60 or more per 1,000, with more-favoured climates, where the rate drops to about 30. The appointment of a professorship in paediatrics, he believed, would do much to improve that position. The purpose would be to remedy the very great shortage of consultants and specialists in child health and also the lack of refresher courses for medical practitioners. There was an undoubted need for more specialized training of medical students in these matters, and many doctors now in the Forces would come back after long absence wishing to brush up their knowledge of child health. The services and advice of the professor would be available to all hospitals and contributing authorities. Manchester University would be responsible for the capital charge if the local authorities would provide £10,000 a year, the maintenance cost, for a minimum period of ten years.

UNIVERSITY OF LEEDS

The Vice-Chancellor, presiding at a graduation ceremony on March 24, referred to the announcement by the Chancellor of the Exchequer of a grant of £1,000,000 a year for two years for the medical schools of the country. This sum, he said, should enable a good start to be made in the much-needed developments contemplated by all the schools in their post-war programmes. Active preparations were in progress in the University of Leeds for the expenditure on its own developments of whatever sum might be allocated to it. The two great needs were staff and buildings. Money alone could not meet them; but whatever was practicable would be done. The establishment of a whole-time Chair in Psychiatry, through a grant by the Nuffield Trustees, should give a lead to a notable advance in psychological medicine in that region of Yorkshire. It was hoped that with contributions from other sources the University would soon possess a complete psychiatric unit serving a wide area. A desirable change in the medical course had been the resumption of the three-year clinical period.

The following candidates have been approved at the examinations indicated:

M.D.—[1] O. Magidson, J. Overton, Lydia A. Wilson.

FINAL M.B., CH.B.—*Part II*: G. R. Fryers, Rhoda M. Allison, E. G. Brewin, Alice E. Buck, K. J. Burnett, P. S. R. Burrell, O. P. Edmonds, R. T. D. Franklin, W. I. M. Gibson, Gertrude Harris, G. W. J. Hawbrook, Edith V. Heritage, Dorothy D. Jones, O. G. Jones, Catherine M. Lamplugh, J. Lintin, D. H. McMillan, Marjorie S. Oxley, D. S. Smith, H. H. Smith, J. G. Smirk, Stella A. Speight, Monica C. Summerscales, E. J. S. Townsend, W. R. Walker, R. W. Wilkinson.

The following scholarships and prizes have been awarded:

Infirmary Scholarship: E. W. Green, J. H. Shoesmith; West Riding Panel Practitioners' Prize: R. J. Scothorne; Littlewood Prize in Anatomy: E. W. Green; Waddington Prize in Anatomy: Audrey W. Gillott.

[1] With distinction. [2] Second-class honours.

UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B.—*Part I*: F. G. Anderson, Olive M. Bell, A. J. Borkin, J. H. Brenner, Mary E. Casper, Beryl G. Castell, J. W. Bowie, [1 2] J. C. Davis, E. Dewsbury, W. M. Edwards, W. Ellenbogen, Jeanne A. Elphick, H. C. Endbinder, D. W. A. Evans, A. J. Farmer, Sheila K. Fraser, [2] T. H. H. Green, G. I. T. Griffiths, M. F. Holt, Elizabeth Howorth, A. B. Jones, E. Jones, S. Kalinsky, H. Keidan, F. D. Kitchin, F. P. Lennon, G. H. Lucas, Cicely D. Lyons, Edith G. Mercer, J. Moloney, [1 2] Janet H. Mountford, J. M. Old, W. L. Owen, Dorothy C. Peterson, [2] J. S. Porterfield, J. E. Riding, L. Robinson, D. L. Sharples, Audrey A. Shone, G. C. Slee, W. B. Smellie, R. J. Smith, Basha Taylor, Dorothy E. M. Thomas, W. A. L. Thompson, B. Towers, M. H. Turner, Pamela J. Tyson, D. G. Walker, Barbara M. Webber, H. H. Whincup, L. C. Wolfman, Jessie I. Young. *Pharmacology and General Therapeutics*: I. L. Francis, G. Frow, Alicia J. Middle. *Part II*—*Forensic Medicine and Toxicology*: Audrey M. Ashcroft, N. L. Bailey, K. Baker, S. Beacon, D. T. Binns, R. Brearley, P. M. Bretland, Cecile N. Broster, G. B. Brown, J. H. E. Carmichael, Helen A. Cawson, M. H. Clark, N. Coulshed, S. Croft, Pauline M. Dean, R. L. Goldson, H. C. Graham, E. A. Harris, Alisa M. Heath, G. C. Hunter, F. G. Ince, R. W. Kennon, Barbara M. Killick, T. S. Law, Jean Learoyd, A. C. Levinson, H. S. Levy, T. R. Littler, J. A. O'Garra, A. F. Pritchard, Rachel M. Rawcliffe, G. P. Reed, H. Roberts, W. G. Roberts, P. W. Robertson, Olive R. Rodgers, K. S. Shaw, F. W. Sheffield, H. H. Slack, Helen M. Taylor, L. Temkin, Dorothy E. M. Thomas, R. G. Thomas, Maureen M. Tickle, L. F. Tinckler, W. R. Wallace-Jones, J. Ward, Joyce Watson, N. P. Watson, W. F. Wille, E. H. Wilson, [3] Esmé M. Wren, Aline N. Wynroe. *Public Health*: M. H. Clark, S. Croft, P. Hampson, R. W. Kennon, T. S. Law, Rachel M. Rawcliffe.

[1] Distinction in Pathology and Bacteriology. [2] Distinction in Pharmacology and General Therapeutics. [3] With distinction.

UNIVERSITY OF WALES

WELSH NATIONAL SCHOOL OF MEDICINE

The following candidates have satisfied the examiners at the examination indicated:

M.B., B.CH.—*Medicine*: J. W. Bowen, D. H. Davies, L. G. G. Davies, Joan Guy, J. C. Ham, D. I. Harries, B. E. Heard, R. M. E. Seal, D. R. Thomas, D. V. Thomas, Glenys M. Thomas, P. R. J. Williams. *Pathology and Bacteriology*: Gwenllian M. Griffith, N. E. H. Jones, D. M. Rowlands, Jean T. Smith, K. P. Williams.

UNIVERSITY OF ST. ANDREWS

Lieut.-Col. Stuart McDonald, M.D., R.A.M.C., has been appointed to the Chair of Pathology in the University.

UNIVERSITY OF DUBLIN

SCHOOL OF PHYSIC, TRINITY COLLEGE

The following medical degrees were conferred on March 14:

M.CH.—T. L. Lawson, E. E. O'Malley.

M.B., B.CH., B.A.O.—W. Burns, Isabel M. Crotty, Moira Danaher, R. M. Dooley, M. J. Doyle, L. Grant Duff, R. R. Hamilton, L. A. Kerwood, T. C. T. Killen, E. W. McBirney, J. D. McKeever, D. O'Connell, Katharine B. F. Orr.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At the statutory Comitia held at the College on Monday, March 26, Lord Moran was re-elected President for the ensuing year.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The following lectures will be delivered at the College (Lincoln's Inn Fields, W.C.) at 4 p.m. on each day: Friday, April 6, Hunterian Lecture by Prof. H. S. Shucksmith, "Abdominal Injuries in Battle Casualties"; Thursday, April 12, Robert Jones Memorial Lecture by Prof. F. Wood Jones, "Some Reflections on his Teaching of Myology"; Monday, April 16, Thomas Vicary Lecture by Surg. Rear-Admi. G. Gordon-Taylor, "Medical and Surgical Aspects of the '45 (the Jacobite Rising of 1745)"; Wednesday, April 18, Hunterian Lectures by Prof. D. M. Stern, "Aetiology and Treatment of Prolapse, with Special Reference to Cystocele and Stress Incontinence"; Monday, April 23, Squad. Ldr. T. Cradock Henry, "Aviation Injuries of the Face"; Wednesday, April 25, Prof. Jean M. Dollar, "Use of Plastics in Ophthalmic Surgery"; Friday, April 27, Squad. Ldr. D. N. Matthews, "Storage of Skin for Autogenous Grafts"; Monday, April 30, Prof. A. K. Monro, "Treatment of Acute Appendicitis—with Special Reference to 1,000 Cases." The lectures are open to medical practitioners and advanced students.

Medical Notes in Parliament

Deafness in Ex-Service Men

In the House of Lords on March 14 the DUKE OF MONTROSE asked what progress had been made by the Medical Research Council toward the supply of standard national acoustic aids for deafened ex-Servicemen. He advocated approved otological clinics in all large cities. He said the late Lord Dawson had promised to support that proposal. The Medical Research Council had formed three committees to go into the question of deafness. One dealt with the medical and surgical side. Another dealt with education. A third committee dealt with aids and all kinds of assistance. Only one doctor was on it. The committee should be broadened. Lord HAMPTON asked whether the Government possessed through the medical services information on what degree of deafness they could expect to result from service in particular arms such as tanks.

Viscount CLIFDEN said the numbers of ex-Service men involved were relatively small. He doubted whether a network of clinics would be justified at present. Few otologists were available. Up to January, 1945, cases of ear diseases attributed to service in the armed Forces since the beginning of this war were: Navy, 500; Army 3,800; Air Force 700. The numbers recommended by aural surgeons for hearing aids had averaged fewer than 60 a year. Any recommendation made by the Medical Research Council for a more comprehensive scheme of rehabilitation applying to both civilians and ex-Service personnel would be sympathetically examined. The Ministry of Pensions had 16 regional offices where all deaf cases were seen by aural specialists.

Food Parcels for British P.O.W.s

On March 20 Lieut.-Cmdr. JOYNSON-HICKS asked the Secretary of State for War whether, in view of the special transport difficulties in supplying foodstuffs to our prisoners of war in Germany, dehydrated foods and vitamin tablets were included in the consignments under delivery, and what proportion of the consignment they represented. Sir JAMES GRIGG said that this suggestion would be borne in mind, but the efforts of the International Red Cross Committee and S.H.A.E.F. were at the moment concentrated on developing means of transport to get the prisoners supplies in the form they already knew and understood—namely, standard food and medical parcels from the National Red Cross Societies concerned. Large stocks of these were already in Switzerland. The first lorry convoy from Switzerland had reached its destination and distributed food parcels to some 18,000 British and United States prisoners in Bohemia. Further convoys were now on their way from Geneva.

The Whiter Loaf

Col. LLEWELLIN, replying on March 21 to Dr. Summerskill, said there was no consultation with the Scientific Advisory Committee, the Special Diets Committee of the Medical Research Council, or the Nutrition Committee of the Ministry of Health before the extraction rate of wheat was reduced below the 1942 standard. The committee consulted was the Standing Committee on Medical and Nutritional Problems. He added that the present whiter loaf was mainly composed of the new national flour of 80% extraction. According to the advice given to the Government before the extraction rate was altered, and according to the tests since taken, there was no appreciable loss in nutritional value compared with the previous loaf. The Government did not intend to reduce the extraction rate further unless and until it was satisfied that the reduction would not be detrimental from the nutritional point of view.

Payment for Services of Doctor's Wife

Dr. SUMMERSKILL inquired on March 22 whether wives of men conducting a business or profession from their homes could receive payment for services rendered in answering telephones, taking messages, etc., which could be treated as the wife's earned income for the purposes of income tax; and what was the maximum payment permitted before tax became payable.

Sir JOHN ANDERSON replied that the general rule of the income-tax law was that no allowance was to be made for expenses which were not wholly and exclusively incurred for the purpose of the trade or profession. The application of this rule depended upon the facts of the particular case. The decision in any particular case rested ultimately with the appropriate appellate tribunal. Speaking for himself he would not regard a wife as an employee merely because she answered her husband's telephone calls or took his messages.

Dr. SUMMERSKILL asked why the B.M.A. informed doctors in the *British Medical Journal* that they were entitled to remunerate their wives for services rendered in connexion with the practice up to £89 with exemption from income tax.

Sir JOHN said he took no responsibility for the actions of the British Medical Association.

Water Pollution Research

Mr. ATTLEE, in reply on March 22 to Mr. Price, reported that the Water Pollution Research Organization had been carrying out a programme of research into the improvement of water supplies, including methods of water softening, treatment of water to reduce solvent or corrosive properties, the effect of chlorination, and the quality of drinking-water. During the war this programme had been interrupted by the need for investigating urgent problems of importance to the war effort. The study of the treatment of sewage and other effluents was only a part, though an important one, of the organization's work. Detailed plans for the extension of the work of the organization after the war were being drawn up.

Free Choice of Doctor for Old Age Pensioners.—Mr. WILLINK, in reply to Mr. Price on March 8, said most persons in receipt of a supplementary old age pension were entitled to medical benefit under the National Health Insurance Acts with a free choice of doctor. Only a small proportion obtained medical treatment through the arrangements made by public assistance authorities. These arrangements could with his sanction include a choice of doctor. Sanction for arrangements of this kind had already been given to about thirty authorities.

Repatriation for Malaria.—Mr. SORENSEN on March 13 asked the Secretary of State for War after how many attacks of malaria soldiers fighting in Burma and Eastern theatres of war had to suffer before being considered for repatriation on medical grounds. Sir JAMES GRIGG: The general state of a soldier's health and not any fixed number of attacks of malaria determines whether he is repatriated to this country. If modern methods of treatment are properly applied, men need not normally be invalided to this country on account of malaria.

Unqualified Practice in Kenya.—Sir E. GRAHAM-LITTLE asked Col. Stanley on March 14 to investigate complaints that the Government, in the absence of direction by the General Medical Council, encouraged medical practice in Kenya by unlicensed persons in opposition to duly qualified and registered medical practitioners. Col. STANLEY said he had asked the Governor for a report on the subject.

Spinal Injections: Consent of Parents.—Sir JOCELYN LUCAS on March 15 asked Mr. Willink to give instructions that before a spinal injection or lumbar puncture was given to a minor the consent of the parents should first be obtained, except in cases of emergency. He said the practice varied in different hospitals. Mr. WILLINK replied that it was the general practice of hospitals to obtain the parents' consent in these circumstances. It would not be competent for him to give instructions to hospitals on the subject, but Sir Jocelyn's question would draw the attention of any hospital which had not made a practice of obtaining consent to the desirability of doing so.

Allowances for Tuberculous Persons.—On March 20 Mr. McNeil asked the Secretary of State for Scotland if he had considered the recommendation in the Medical Research Council report on mass miniature radiography of civilians that the scheme of allowances for patients suffering from acute pulmonary tuberculosis should be extended to all notified cases of tuberculosis. Mr. JOHNSTON said he was aware of what was stated in the report. The present special arrangements for payment of tuberculosis allowances under emergency powers at the cost of Exchequer funds were designed to encourage persons to give up work and to seek early treatment, and were not designed to meet the needs of the chronic sick or in non-pulmonary cases. The question of financial assistance to persons suffering from incapacity, including tuberculosis, was under consideration in connexion with the proposals on social insurance.

Colonial Medical Service Appointments.—On March 20 Dr. MORGAN asked the Secretary of State for the Colonies if he was aware that during the last six years medical applicants for British Colonial appointments had been interviewed by the appointments private secretary alone, and whether, as this official had no means of judging medical qualifications, this method of selection or recommendation would now be abandoned. Col. STANLEY said that at all formal interviews with applicants for appointments in the Colonial Medical Service it was the practice for one or more members of his medical advisory staff to be present. He did not see any reason for changing this procedure.

Penicillin Supplies in Colonies.—Asked on March 21 to state the extent to which penicillin is now obtainable in the various British Colonies, Col. STANLEY replied that supplies of penicillin were now available from the United Kingdom, the U.S.A., or Canada, as was most convenient, for civilian use on the same basis as in this country. This permitted treatment of all civilian cases for which penicillin was known to be effective.

The Panel List in London.—The numbers of doctors who on Jan. 1, 1945, had more than the specified numbers of London insured persons on their lists were: more than 3,000, 19; more than 2,500 (but not more than 3,000), 32; more than 2,000 (but not more than 2,500), 79—i.e., 130 out of a total of approximately 1,700 doctors. This information was given by Mr. Willink to Sir Robert Tasker on March 22.

Notes in Brief

During the financial years 1935-9 the total expenditure of the Medical Research Council was £970,364, and during the financial years 1940-4 it was £1,328,606.

The Royal Commission on Population, which is continuing to meet once a fortnight, has still a considerable volume of evidence to take and many aspects of the inquiry to investigate further. It is not possible to indicate the date when the Commission will report.

Mr. Herbert Morrison told Sir Wm. Beveridge on March 1 that he had under consideration whether in the next Bill on electoral matters there should be an amendment of the existing provisions relating to the machinery of university elections for the purpose of securing their conduct by secret ballot.

Mr. Bevin said on March 8 that he had no present intention of introducing legislation dealing with the employment of women in hospitals. In a recent speech he had suggested that employment of charwomen in hospitals in the manner they had been employed must be ended and must be put on a proper footing.

Mr. Willink has announced that he is not prepared to ensure that expectant and nursing mothers can secure supplies of "natural unpasteurized milk." He told Mr. W. J. Brown that it is not practicable at present to supply safe milk except by pasteurization and by handling it throughout with strict hygienic precautions.

Mr. Herbert Morrison announced on March 22 that he proposed to arrange a full public inquiry into the circumstances which led to the boarding out of Denis and Terence O'Neill at Bank Farm, Minsterley, and the steps taken to supervise their welfare.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* infectious diseases increased in prevalence, measles by 217 cases, scarlet fever by 197, diphtheria by 86, acute pneumonia by 63, whooping-cough by 25, and dysentery by 16.

Both scarlet fever and diphtheria showed the highest totals for three months. Scarlet fever was especially prevalent in the north-west and north midlands, where the cases rose from 467 to 558. Diphtheria notifications rose by 25 in Yorks North Riding, by 21 in Durham, by 14 in Lancashire, and by 10 in Northumberland. There was an increase of 39 in the notifications of whooping-cough in Yorks West Riding. The total for measles was the largest since registration began, the increase occurring mainly in the south; in the north the incidence actually fell. The largest increases over last week's totals were: London 426, Essex 308, Southampton 303, Sussex 115, Hertfordshire 109, and Glamorganshire 98; the greatest falls were: Yorks West Riding 375, Warwickshire 232, Gloucestershire 172, Staffordshire 112, Yorks North Riding 102, Middlesex 100, Worcestershire 99.

Dysentery notifications exceeded any weekly total, with one exception, for seven years. The chief returns were: London 45, Lancashire 39, Yorks West Riding 39, Dorsetshire 27, Kent 24, Suffolk 22, Surrey 15, Essex 15, Yorks North Riding 14, Devonshire 13, Lincolnshire 13, Derbyshire 13, Gloucestershire 11, Durham 11, Northumberland 10.

In *Scotland* dysentery notifications were 97 higher than last week, those for pneumonia 14 higher, and for whooping-cough 12 higher. Measles notifications fell by 67, those for scarlet fever by 26, and for diphtheria by 16. Dysentery was prevalent everywhere except in the north, the largest returns being Renfrew County 52, Edinburgh 49, Glasgow 23, Lanark County 21, Falkirk 15, Aberdeen County 15, Fife County 14, Stirling County 12, Aberdeen B. 10. One case of smallpox was notified in Glasgow.

In *Eire* diphtheria notifications rose by 10, but most of the other infectious diseases dropped in incidence. Diphtheria is still widespread, 22 cases being notified in Dublin C.B. and the remaining 75 cases covering 41 registration districts.

In *Northern Ireland* the notifications of diphtheria fell from 28 to 8, and measles notifications were 13 lower, but the returns for scarlet fever and whooping-cough were respectively 8 and 7 higher than last week.

Week Ending March 24

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,522, whooping-cough 1,453, diphtheria 499, measles 25,507, acute pneumonia 866, cerebrospinal fever 88, dysentery 420, paratyphoid 3, typhoid 8.

No. 11

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended March 17.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1945 (a)	(b)	(c)	(d)	(e)	1944 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	81	6	31	2	1	87	7	22	6	1
Deaths		3	1				2	2		
Diphtheria	558	22	131	97	8	685	33	187	83	39
Deaths	11	2	—	1	—	10	1	1	—	1
Dysentery	428	45	252	2	—	269	37	117	1	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	1	—	—		—	4	—	—	—	—
Deaths		—					1			
Erysipelas		1	39	8	2		—	52	3	2
Deaths										
Infective enteritis or diarrhoea under 2 years	60	6	6	7 9	5	52	14	11	10 21	2
Deaths										
Measles*	25,266	1498	351	25	54	2,226	286	345	296	2
Deaths	26	2	2	—	—	3	1	—	3	—
Ophthalmia neonatorum	76	2	15	—	—	85	5	16	—	1
Deaths										
Paratyphoid fever	10	1	1 (B)	2 (B)	—	5	—	—	—	—
Deaths	1	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal†	876	47	9	2	4	1,284	86	19	18	5
Deaths (from influenza)	27	3	5	—	—	51	7	3	1	1
Pneumonia, primary			248	35				330	32	
Deaths		53		12	2		80		18	14
Polio-encephalitis, acute	1	—				—	—			
Deaths		—					—			
Poliomyelitis, acute	—	—	—	—	—	6	—	1	—	—
Deaths		—					—			
Puerperal fever		5	10		—		3	13		—
Deaths										
Puerperal pyrexia‡	149	10	9	1	1	166	7	11	—	4
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,621	62	201	19	41	2,395	152	247	22	85
Deaths	2	—	1	—	1	2	—	—	—	—
Smallpox	—	—	1	—	—	3	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	6	—	—	11	1	6	2	1	1	7
Deaths	1	—	—	—	—	1	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,527	71	149	26	21	2,026	206	130	34	18
Deaths	10	1	2	1	1	7	1	1	2	2
Deaths (0–1 year)	411	50	27	30	17	433	65	72	47	31
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	5,053	798	580	181	127	5,793	1009	698	262	161
Annual death rate (per 1,000 persons living)			13·2	11·7	§			16·0	17·1	§
Live births	6,432	672	797	343	250	7,342	906	915	473	341
Annual rate per 1,000 persons living			15·9	22·1	§			18·6	30·9	§
Stillbirths	227	23	38			216	31	40		
Rate per 1,000 total births (including stillborn)			33					42		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Medical News

A meeting of the Medical Society of the L.C.C. Service will be held at the Fountain Hospital, Tooting Grove, S.W., on Wednesday, April 11, at 2.45 p.m., when Dr. L. T. Hilliard will give a clinical demonstration on mental deficiency in children.

The Food Education Society (29, Gordon Square, W.C.1) has arranged the following lectures to be given at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C., all at 2.30 p.m. Monday, April 16, Mr. A. L. Bacharach, "Food—the Science, the Logic, and the Art"; Monday, April 23, Lord Portsmouth, "Food and Agriculture"; Thursday, May 3, Sir Adolphe Abrahams, "Food and Physique."

The *X*-ray Analysis Group of the Institute of Physics will hold its 1945 conference (the fourth in the series) on April 12 and 13 at the Royal Institution, London, under the chairmanship of Sir Lawrence Bragg. The programme includes a lecture by Prof. J. D. Bernal on "The Future of *X*-ray Analysis," and a series of papers on new and improved methods. Discussions are to be included on the equipment of a laboratory for *x*-ray analysis, the interpretation of *x*-ray diffraction by optical principles, and the proposal to convert *x*-ray wave-lengths to absolute values. Further particulars may be had from Dr. H. Lipson (honorary secretary of the Group), Crystallographic Laboratory, Free School Lane, Cambridge.

The annual meeting of the Medical Superintendents' Society will be held at B.M.A. House, Tavistock Square, W.C., on Saturday, April 21, at 2.30 p.m. and will be preceded by a meeting of the Council at 2 p.m.

On March 21 the Queen opened, at Nayland Hall, near Colchester, the British Legion's sanatorium and settlement for the treatment of Service women suffering from tuberculosis. The Queen was received by Sir Frederick Maurice, president of the British Legion, and was shown round the sanatorium by Dr. F. R. G. Heaf, honorary consulting medical director. At present there are about 200 patients there.

A ceremony in honour of William Harvey was held in the Department of Physiology of the Mexico Faculty of Medicine on Oct. 30, 1944, under the presidency of Dr. Alfonso Caso, rector of the university. The ceremony included the presentation of a bronze bust of Harvey, an address by the British Ambassador, and a paper on "Harvey's Place in the History of Scientific Methods in Biology," by Dr. J. J. Izquierdo, head of the department of biology.

Prof. James Mackintosh, Dean of the London School of Hygiene and Tropical Medicine, is visiting Sweden to lecture for the British Council on "Housing and Medicine," "Nutrition and Medicine," and other aspects of social medicine and health education in Britain. He will probably also visit Finland. Prof. Mackintosh hopes to obtain in Sweden information for inclusion in a report on housing which he is preparing for the British Government.

Among the first advance party of U.N.R.R.A. personnel who recently arrived in Yugoslavia is Dr. Kenneth Sinclair-Loutit, who was medical officer for Civil Defence in the Finsbury district, where he was in charge of the casualty clearing station. The U.N.R.R.A. group forms part of the Mission which the Anglo-American Military Liaison Organization has sent to Yugoslavia to assist the local relief authorities. Military relief supplies have already arrived on the Dalmatian coast and distribution has begun both in Dalmatia itself and in the Islands. As further supplies arrive, and rail and road communications with the interior are repaired, this area will be increased and further personnel will be called forward. The workers are at the moment engaged as agents of the military in distributing supplies, but an agreement is now being negotiated with the Yugoslav Government, under which U.N.R.R.A. will take over responsibility from the military authorities at the end of what is known as the "military phase."

The November, 1944, issue of *Surgery* contains a symposium on surgical lesions of the thyroid.

Sir Philip Manson-Bahr has been appointed honorary consultant physician in tropical diseases to the Ministry of Pensions.

The second Pan-American Congress of Ophthalmology, which was going to be held in Montevideo, has been postponed to the autumn of 1945.

Dr. A. G. Curphey, M.B.E., M.C., has been appointed an Unofficial Member of the Legislative Council of the Island of Jamaica, and Dr. L. A. P. Slinger, O.B.E., has been appointed a member of the Executive Council of the Island of St. Lucia.

Recent news of conditions in Holland and France is given by eye-witnesses in the March number of *The World's Children*, published by the Save the Children Fund, 20, Gordon Square, London, W.C.1, price 6d.

Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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MEMBERS' SUBSCRIPTIONS should be sent to the SECRETARY of the Association. TELEPHONE: EUSTON 2111. TELEGRAMS: *Medisecra Westcent, London.*

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

ANY QUESTIONS?

Post-immunization Diphtheria

Q.—*A boy was immunized by A.P.T. when about 2 years old. When 5 he had a severe attack of diphtheria, followed by post-diphtheritic paralysis and "heart trouble." The boy is now 7, and the mother would like to ensure there will be no more diphtheria. He is in good condition but has cardiac irregularity. What further procedure would you suggest? What value would a negative Schick test have in such a case?*

A.—After the boy's past contacts with the diphtheria bacillus and its products in the early immunization, the attack of diphtheria, and the treatment with antitoxin, his cell reactivity is probably somewhat altered. The Schick test may be of the pseudo-variety and may prove difficult to read. However, it is important to test and to read about the fifth or seventh day. If he is certainly Schick-negative you would be justified in telling the mother that his immunity is reasonably high, but since she wishes him to have very high protection you would recommend a further short course of two injections, the first being 0.1 c.cm. of A.P.T. (personally I should give this injection at the same visit as for the Schick test). If the Schick test were positive or doubtful I should be strongly inclined to give a second injection of A.P.T. about four weeks later. If my first dose of 0.1 c.cm. of A.P.T. produced a slightly sore arm—which would not be surprising in view of the boy's past experience—I should make the second dose of 0.1 c.cm.; otherwise use 0.5 c.cm.

Semen and Vasoligature

Q.—*What happens to the seminal fluid of a man upon whom the operation of bilateral vasoligature has been performed? Does it not exert back pressure on the seminiferous tubules with deleterious result?*

A.—The external secretion of the testis ceases after vasoligature, but, strange to say, atrophy of the tubules from back pressure does not usually occur. When the operation of vaso-epididymostomy is successful in short-circuiting a blockage in the epididymal canal spermatozoa reappear in the semen even although the blockage has existed for several years. It is quite true that spermatogenesis may cease in an obstructed testis, but as the seminiferous tubules do not degenerate it may later be restored.

Skin Lesions and Menstruation

Q.—*A student nurse aged 23 has had two attacks (1943 and 1945) in which the ears tingle; the hands suddenly feel hot, and then tingle. A blotchy red rash and profuse perspiration follow. About an hour later the feet are similarly affected. In the first attack she had a severe headache. Both attacks coincided with menstruation. She does not feel ill. Between the attacks the hands are rather cold but not moist. Suggestions as to diagnosis and treatment will be welcomed.*

A.—An association between skin lesions and menstruation is well established. All manner of lesions are described, and although allergy plays a part in some the explanation of most is conjectural. Usually, however, a vascular change is fundamental, and this is similar to the one which takes place in the endometrium. An initial vascular spasm followed by dilatation and increased fragility and permeability of capillaries has been demonstrated in the skin during menstruation (not confirmed by all workers). The autonomic nervous system may also be involved, and it may be that oestrogens can bring about a liberation of acetylcholine not only in the uterus but also in the skin. There are, however, wide variations in the susceptibility of different tissues, and of different individuals, to reactions of this kind; an over-anxious or neurotic disposition appears to be an important factor determining the appearance of skin rashes.

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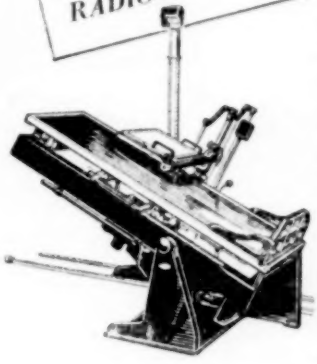

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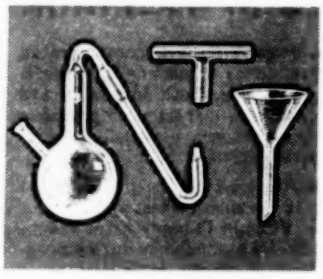

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Refs: J. Hyg. 1942, 42, pp. 505-526
B.M.J. 1943, July 24, p. 97
Med. Off. 1943, Feb. 20, p. 62

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flushes, sweating, etc. In this case the infrequency of the attacks may be dependent on some emotional or other nervous upset at the time.

Treatment of such conditions is unsatisfactory and is both empirical and symptomatic. Clinical optimism and therapeutic vagueness are reflected in the varied remedies that have been tried—namely, oestrogens, progesterone, gonadotrophin, testosterone, calcium, vitamins C and K, snake venom, and ephedrine. As attacks are so infrequent it is doubtful whether any medicinal treatment is indicated. If there is a "nervous" element to the case, then clearly this should be treated. Otherwise simple treatment by limiting the intake of salt and fluid, and administering ammonium chloride 10 grains t.d.s. for seven days premenstrually—the usual measures to combat "menstrual tension states"—might be tried.

Gonorrhoea and the G.C.F.T.

Q.—*A female contracted gonorrhoea about 15 months ago; the complement fixation (G.C.F.T.) is positive. She refuses to go to the local V.D. clinic. What is the present treatment? Is it with sulphapyridine or sulphathiazole? Can she be considered cured when her complement fixation is negative? or would a urethral swab have to be taken before one could assume this?*

A.—A positive complement-fixation test for gonorrhoea (G.C.F.T.) present 15 months after the date of the original infection is generally considered highly suggestive, but not a proof, of persistent infection. Before instituting treatment it is essential, therefore, to know whether gonococci are still present, and if so where. For this purpose a careful clinical examination should be carried out and specimens for microscopical and bacteriological (cultural) examination taken from the urethra and cervix uteri; since a positive G.C.F.T. is often due to a closed focus of infection, particular attention should be paid to the glands of the cervix uteri, Bartholin's glands, and the Fallopian tubes. If gonococci are found treatment may be started; if they are not found, further examinations should be carried out immediately after the next menstrual period and repeated until the presence of gonococci can be confirmed or excluded; for the latter at least three monthly negative examinations are necessary.

As regards treatment, sulphathiazole is preferable to sulphapyridine: the optimum dosage is 5 grammes a day for 5 days, given in equally spaced doses (25 g.). If the patient was treated previously with sulphonamides she should be questioned as to signs of intolerance. During sulphonamide therapy the urine should be rendered alkaline with bicarbonate of potassium or sodium, and the fluid intake should be at least six pints per day. If one course of sulphathiazole fails to effect cure a second course of the same drug, or preferably of sulphadiazine, may be tried in the same dosage after an interval of 7 days, but a white cell count should be done first to guard against agranulocytosis. The sulphonamides often fail to effect cure in the presence of a closed focus of infection; in such cases other methods of treatment have to be adopted. A negative G.C.F.T. would be strong presumptive evidence of cure in this case, but should be supplemented by clinical and bacteriological examinations, as mentioned above. It should be borne in mind that the rectum is not uncommonly infected in the case of a female suffering from gonorrhoea.

Operation for Varicocele

Q.—*What are the late results of operation for varicocele as regards (1) recurrence; and (2) late atrophy of the testis?*

A.—Most surgeons do not recommend operation for varicocele save in very special circumstances, for the disability is usually so slight that it does not warrant the discomfort of the operation. Nor are the results such as to encourage one to operate. If the veins are excised recurrence is indeed very rare—under 2% according to Douglas. The chief drawback, however, is the damage done to the testis. J. Spotoft has recorded the late results of 27 operations, and his observations on this point deserve to be quoted: "The most remarkable changes are observed in the testicle, which in one-third of the cases only has kept its normal size and consistence. In one-third of the cases the testicular atrophy is so pronounced that the gland has been reduced to half or less than half its normal size." (*Acta chir. scand.*, 1942, **86**, 1.) This quotation is a sufficient answer to the second part of the question. It is true that larger series of cases have been reported on with a smaller percentage of testicular atrophies, but Spotoft's series were very carefully followed up and are likely to be accurate.

Age of Conception and Malformations

Q.—*What relation, if any, is there between the strength and mental ability of the offspring and the age of the parents at the time of procreation?*

A.—Any effect of paternal age at the time of conception of the child is at best so small that for all practical purposes the answer is "none." There are, however, a number of indications that the prenatal environment of the developing embryo becomes less favourable as maternal age advances. This manifests itself not so much in any small average effect on physical strength or intelligence as in an increased susceptibility to major accidents of development, provided that the underlying genetic basis is present. Much the most striking effect of increasing maternal age is seen in mongolism; the chance of bearing a mongol child rather more than doubles with each five years' advance in maternal age. A similar though much less pronounced effect is seen in connexion with certain other deformities—for example, anencephaly and congenital heart disease. It would seem that the normal human foetus is robustly protected against unfavourable prenatal influences. Certain genes, however, lower the margin of safety, so that some of their bearers react unfavourably at some critical stage of development. It is in all probability in some of these instances of lowered threshold to noxious influences that advanced maternal age reveals itself as an unfavourable factor. It should be emphasized, however, that although certain rather remote risks are considerably increased the absolute risk remains small. In the absence of definite indications to the contrary, no woman should be deterred from parenthood on account of age alone.

"Encephalopathic Attacks"

Q.—*What is the factor present in blood causing "encephalopathic attacks" in hypertension and chronic Bright's disease? Is there any treatment which will prevent them from occurring?*

A.—There is no known factor in the blood which causes "encephalopathic attacks," and there are no known concomitant changes in the blood chemistry. The attacks bear no relation to renal failure, and the only known association is with a raised blood pressure. This association is so common that the condition is usually called "hypertensive encephalopathy." An excellent review of the syndrome is given by A. M. Fishberg (*Hypertension and Nephritis*, 1939, Lea and Febiger). Prodromal symptoms usually give notice of an impending attack, which is in most instances preceded by a further rise in the already increased arterial pressure. The immediate cause of the attack is probably cerebral ischaemia, which is due either to local cerebral vasoconstriction or to oedema of the brain.

As the prodromal symptoms often give warning of an impending attack, preventive treatment is of considerable value. Venesection is frequently effective in stopping the attacks from developing and in ameliorating them if they have already occurred; the amount of blood removed is usually about 500 c.cm. Magnesium sulphate is also useful, 4–6 oz. of 50% solution being given by rectum. Sedation with chloral hydrate or morphine may be of value.

Anaesthetic Deaths

Q.—*What is the total anaesthetic mortality among the civilian population in Great Britain to-day (1) under 10 years, and (2) over 10 years of age? What proportion of these are people who are apparently healthy and in whom no cause for anaesthetic death is discovered? I am referring to death "on the table."*

A.—It is not possible from death certificates to distinguish deaths occurring "on the table" during anaesthesia from those occurring later as a result of, or whilst still under, the anaesthetic. All that these statistics can tell us is the number of deaths in the certification of which (usually by coroners) an anaesthetic was mentioned as a principal or contributory cause, classified according to the anaesthetic(s) used and according to the disease or injury on account of which it was administered. In a few instances it is stated that the anaesthetic was not a factor in the fatal issue, but whether this is stated or not all deaths with mention of anaesthesia are assigned by the Registrar-General to the disease or injury which necessitated the administration. In the rare instances in which no such reason for using an anaesthetic can be ascertained, the assignment is to the special group of "anaesthetic accidents." During the period 1941-3 the total deaths in England and Wales "under or associated with" anaesthesia according to death certificates averaged 144 annually at ages under 10 and 632 annually at ages 10 and over. Deaths assigned to the group "anaesthetic accidents" as defined above averaged 2 annually.

Sulphonamides during Lactation

Q.—*What dangers if any, either to the offspring or to the mother, occur when sulphonamides are given to a woman during lactation? What proportion taken by mouth passes into the maternal milk? Is any particular form of sulphonamide preferable?*

A.—When sulphonamides are given to a woman during lactation there are no special dangers owing to lactation, but only those which would be present with any adult person—e.g., cyanosis, rashes, renal lesions, etc. There is no danger to the offspring. The amount of sulphonamide which passes into the milk is approximately equal to the concentration in the blood—e.g., 3–13 mg. per 100 c.cm., according to the dosage. In extreme cases the child might receive up to 30–40 mg. sulphonamide per day, but usually it would be much less than this. These quantities are too small to be significant. The best sulphonamides to use are sulphathiazole or sulphadiazine,

or failing these sulphanilamide. Sulphapyridine should be avoided in case it causes nausea and interferes with lactation. For further information see Aguirre *et al.*, *Sem. méd.*, Buenos Aires, 1942, **49**, 621 (*J. Amer. med. Ass.*, **119**, 982); Foellmer, *Klin. Wschr.*, 1941, **20**, 913; Hepburn, Paxson, and Rogers, *Arch. Pediat.*, 1942, **59**, 413; Rieben and Druey, *Schweiz. med. Wschr.*, 1942, **72**, 1376.

Morphine and Cerebral Haemorrhage

Q.—*As morphine is often recommended for the treatment of shock and internal haemorrhage, would you advise an injection during the acute stage of a cerebral haemorrhage?*

A.—Morphine is given to patients with shock or internal haemorrhage for the relief of restlessness and pain. In cerebral haemorrhage these symptoms are absent, and it would be contraindicated on account of its depressant effect on the respiratory centre.

INCOME TAX

Sch. D or Sch. E: Cancellation of 1943-4 Tax

X. M.'s wife has for the past 8 years worked as a locumtenent for a local authority. Payment has been on a sessional basis for work done. She has been assessed under Schedule E, but the inspector of taxes contends that for 1943-4 (and presumably the earlier years also) the correct basis of assessment was under Schedule D, and therefore that she is not entitled to cancellation of the 7/12ths tax for 1943-4.

*** Seeing that, apart from the £5 5s. casual consultation fees, Mrs. M.'s whole work has been for a single authority, and presumably done under the instructions of that body, there seems to be good ground for contending that this is a case of part-time employment and that the earnings were and are correctly chargeable under Schedule E. We suggest that that line should be taken and the inspector of taxes asked to reconsider his views. If the past year's liability were recalculated on a "Schedule D" basis the difference in tax would probably not be substantial; it would arise mainly from the allowance on books and subscriptions, as travelling expenses incurred between residence and place of work are not normally allowable under either schedule—as suburban workers in the city find to their cost.

LETTERS, NOTES, ETC.

Urea for Migraine

Dr. J. A. BROWN (Birmingham) writes: In reply to a question on the use of urea in migraine (*Journal*, March 24, p. 431) a dose of 15 *grammes* t.d.s. is suggested. I have treated a considerable number of cases of migraine with success and have found the following dosage effective: 20 *grains* t.d.s. for one week; 20 grains twice daily for two weeks; 20 grains once a day for several months. Failure to continue the daily dose is frequently followed by a renewal of attacks of migraine. It is interesting to note that the suggestion made by Sir Walter Langdon-Brown that urea might be of some value in the treatment of obesity (probably due to water retention) in young women has been found to be effective. A dose of 60 grains t.d.s. has in some cases resulted in a reduction of 6 to 8 oz. per week for a few weeks.

Menstruation and Epilepsy

Dr. F. NEWMAN (Marden, Kent) writes: As a patient of mine suffering from epilepsy at the menstrual period has had an artificial induction of the menopause by radium and has benefited very greatly as a result, I feel this information might be of help to the questioner whose problem is printed in the *Journal* of March 17 (p. 396). The patient was told by the surgeon that she might derive benefit and she might not. Under these conditions she agreed to risk it and is very thankful she did so.

Dr. J. RABINOWITCH (radiologist, E.M.S.) writes: With reference to the problem raised in your issue of March 17 (p. 396) whether an artificial menopause would cure epileptic fits which occur only during menstruation, I would like to quote the following two cases: (1) A woman aged 50 had epileptic fits of considerable severity since her menarche at 15, at the rate of 4 to 5 attacks a week. Her menopause occurred when she was 43, and with her last period all fits ceased abruptly and she has never suffered from them since. (2) A woman of 33 who has oligomenorrhoea and spells of amenorrhoea lasting from 5 to 14 months has a few epileptiform seizures every 28 to 30 days. These are accompanied by loss of consciousness for a short while and a dazedness lasting about 48 hours, and are independent of whether there is any actual menstrual loss or not. My first case opposes the current view that the menopause has no influence on the occurrence and frequency of fits. The second case is similar to that of your correspondent, and shows that the fits are not actually caused by pain or the passage of clots but are probably due to a hormonal mechanism. Harris (*Endocrinology*, 1932, **16**, 29) records hypoglycaemic attacks associated with menstruation which frequently simulate epileptic convulsions. Whether these hypoglycaemic fits are caused by a hormonal imbalance leading to an oversecretion of insulin is not clear, but the coincidence of menstruation and convulsions would seem to incriminate either the ovaries or the pituitary gland. I would therefore suggest that, if possible, a temporary amenorrhoea only be produced by *x* rays, and the effect it has on the fits be observed first. If the fits cease, then I would resort to the more drastic complete artificial menopause. If the fits continue in spite of cessation of the periods it may be worth while irradiating the pituitary.

A Case of Scorpion Bite

Dr. E. G. COHEN writes from abroad: On Feb. 14, 1945, at 10 a.m. a sergeant reported that he had just been bitten by a scorpion while man-handling parts in an ill-lighted store. He complained of pain in the tip of the right index finger (where he had been bitten) with twinges of pain shooting up to the right axilla. The pain was not severe, and he felt perfectly well. On examination he was of good colour, with a pulse rate of 80 per minute, of good volume and tonus. No puncture wound was visible on the horny skin of the index finger, but slight oedema of his subcutaneous tissues was present. Pressure on the finger caused no further pain. The axilla was not tender, nor were any glands palpable. While a syringe and local anaesthetic were being prepared, a scalpel was flamed and the finger incised longitudinally for 3/8 in. on either side of the bite. Free bleeding resulted and the finger was agitated in warm hydrogen peroxide. Then the base of the finger was infiltrated with 3% local analgesic, in which was incorporated adrenaline, 8 c.cm. being used. Some two minutes after infiltration the man felt faint and rapidly turned yellow (owing to prophylactic mepacrine this is the colour of skin on blanching). He was seen to be copiously sweating and began to retch; the pulse was not palpable at the wrist. He was laid flat, covered with a blanket, and given hot tea and a hot-water bottle. When this had been done his heart rate was 100 and B.P. 85/60. After ten minutes he had recovered: B.P. 130/80, pulse 76. On questioning, he said the base of his finger soon went numb and this gradually spread down to the tip, which took about ten minutes before becoming free of pain. He was kept under observation for 24 hours, but there was no further oedema, pain, or circulatory collapse. Manson-Bahr has reported relief from pain immediately on application of liq. ammon. fort. or slowly with a more dilute solution. In his own case he incised the area and bathed with permanganate of potash, prior to infiltration with local analgesic and adrenaline. Circulatory reactions can be very severe in young children, and he advised the use of antiserum made by inoculation of horses with extracted scorpion venom. This can be used both prophylactically as well as therapeutically. The points of interest are (1) the relative inconsequence of a bite if the treatment (even if only symptomatic) is begun early; (2) the collapse a good two minutes after the infiltration. A psychological faint was considered unlikely, and pain though still present was not severe. Perhaps it was due to absorption of venom before adrenaline could slow this down by vasoconstriction.

Unusual Cause of Antenatal Death

Capt. G. RHYS EVANS, R.A.M.C., writes: The following unusual cause of antenatal death might be of interest. During the fighting in Italy I was asked to visit a sick Italian woman at a rather remote farmhouse. On arrival I found a pregnant woman aged about 33, multiparous, with a small 2-days-old infected wound about McBurney's point. Her temperature was 102°, pulse rate 124, tongue furred and dry. She had twins; one head was engaged and movement could be felt. She refused to be evacuated, and I put her on sulphanilamide 2 g. 4-hourly for 24 hours and then 1 g. 4-hourly. Next day her condition was unchanged, but on the following day I found she had given birth during the night to one live twin boy and one dead. The latter had been killed by the piece of shrapnel which had penetrated his brain. Her temperature was now 100° and pulse 98, and I continued the sulphanilamide. Two days later when I had to leave the district her temperature and pulse were normal and both mother and child were doing well.

Antibiotic Action of Moulds

Capt. I. G. ANDERSON, R.A.M.C., writes: In the recent literature on penicillin I have seen no mention of a very early experiment to utilize the antibiotic action of moulds. Shortly before the war I came across a paper in the *Presse Médicale* about the year 1906-8 by A. Vaudremer, who described the clearing of a slope of tubercle bacillus culture by the mould *Aspergillus niger*. Further, the author suggested that this mould should be used clinically in tuberculosis. I believe he went further than that, as I also came across a reference to "Vaudremer's vaccine," but was unable to find any more details. Perhaps someone with better access to a library than I have would care to verify the above reference.